



News in Brief

Lung on a Chip

New ersatz lung, no bigger than a multivitamin, could represent a new pharmaceutical testing method.

On it, researchers have created an artificial alveolus, one of the sacs in the lungs where oxygen crosses a membrane to enter the body's blood vessels, Popski wrote.

A polymer sheet that stands in for the membrane is in the blue strip. On one side of the sheet, blood-vessel cells mimic a capillary wall; on the other, lung-cancer cells mimic lung epithelial cells.



Scientists have tested the chip's immune response, and it behaves just like real tissue would, a first step to having lifelike organ systems on which drugs can act.

The chip's primary developer, biomedical engineer Dongeun (Dan) Huh of Harvard University, hopes that within two years, the chip will succeed in mimicking the process by which the lungs swap oxygen for carbon dioxide.

Huh would like to create a suite of artificial organs to be used in cosmetics testing and pharmaceutical safety trials.

Ultrasound Speeds Up Bone Healing

Pulses of high-frequency sound can significantly speed up the healing of broken bones, a study has found.

According to Telegraph, researchers tested the therapy on patients with fractured shin bones, or tibias, which had not properly healed after more than four months.

Half the 100 participants were treated with an ultrasound probe and half with a sham device.

Over a period of 16 weeks, faster healing in patients receiving the real treatment resulted in 34 percent greater bone density at the injury site.

The treatment, called LIPUS, (low-intensity pulsed ultrasound) is delivered by a small emitter linked to a handheld controller.

Therapy sessions lasting 20 minutes were conducted every day throughout the study period.

The research was conducted by a team of German scientists backed by global medical devices manufacturer Smith and Nephew.

Dr. Jon Block, a US consultant for the company based in San Francisco, said, "These findings demonstrate significantly greater progress toward bone healing after LIPUS treatment compared to no LIPUS treatment in subjects with established delayed unions of the tibia."



"This should assist in establishing this non-invasive modality as a viable, effective treatment option for patients suffering these injuries."

The patients taking part in the study had a wide age range from 14 to 70.

All had fractures of the shin bone shaft that had failed to heal adequately after a significant amount of time.

Delayed union—the knitting together of broken bones—occurs in around 4.4 percent of tibial fractures.

Sometimes the bones do not mend at all, resulting in functional impairment and loss of quality of life.

Currently "non-unions" are tackled with complex and costly procedures which involve grafting on extra pieces of bone and the use of growth-promoting chemicals.

Swiss Award for Wikipedia Founder

Wikipedia Founder Jimmy Wales has been awarded 100,000 Swiss francs (£65,000) by a Swiss organization for "democratizing the access to knowledge".

The Im Gruene Foundation said the free online encyclopedia "revolutionized the access to knowledge as man's most important resource" because it allows users to also be contributors, the Press Association reported.



The Gottlieb Duttweiler Award—named after a Swiss businessman—is awarded irregularly and was last given to former UN Secretary-General Kofi Annan in 2008.

Wikipedia is one of the most popular websites in the world. Wales has said the site has more than three million entries in English, far more than a traditional encyclopedia, and is rapidly expanding into other languages, with almost a million entries in French and more in German.

Cellphone Purifier

Did you know that a cellphone is one of the filthiest personal gadgets we carry around in our pockets? It's about as clean as a hotel remote.

Japanese phone operator, NTT DoCoMo understands that in the real world, our hands are dirty as hell too. That's why they are conceptualizing a cellphone with a built-in air purifier.



The cellphone is dubbed the 'Plasmacluster' and it uses an ion generator that can cleanse the air within a 12-inch radius of the device. The ions are emitted through the bottom of the cellphone through six holes. Dvice wrote.

The technology for the Plasmacluster is currently still in development and adds some heft to standard Japanese cellphones, but NTT DoCoMo is hoping that the tech will shrink in size over time.

Roboscooper Roams Rooms, Picks Stuff Up

It's just what every young boy with a messy bedroom has dreamed of—a robot that trundles across the floor, picks things up and takes them away.

WowWee's Roboscooper can do just that, although it's limited to small objects that weigh no more than one ounce (28 grams).

The toy robot has six rubber wheels, a cargo bed, articulated arms and a WALL-E-like head with infrared eyes. Gizmag wrote.



Users can guide it to objects manually with the remote control, or leave it in autonomous mode, where it roams around (avoiding obstacles) and picks up whatever it comes across. It then takes the items to a location determined by the user, where it shakes them out of its cargo bed.

Like a lot of electronic toys, Roboscooper is big on noise. It makes a skidding sound when it stops, beeps when it backs up, and delivers a variety of phrases such as "Let's go to work" and "One step closer to a cleaner world". It also verbally lets users know when an object is too heavy, or when it gets stuck.

Durability of Fabrics Enhanced

Iranian researchers succeeded in boosting the durability of cotton fabrics by using silver nanoparticles and increasing nanosilver adsorption on the surface of such fabrics.

"In our research, we studied the effect of the cottonization of cellulose (cotton) on the adsorption of silver nanoparticles by using 3-chloro-2-hydroxypropyl trimethyl ammonium chloride as a cation-generating agent and two types of silver nano-colloids containing different stabilizers," Mohammad Esmail Yazdanihasas, a member of the Scientific Board of Islamic Azad University, was quoted as saying by Fars News Agency.

"Silver nano-colloids with various concentrations were formed on cottonized and non-cottonized cotton at 80°C and 100°C.

The amount of nanosilver adsorbed by the samples was determined by



Cationized cotton has a stronger antibacterial property in comparison to the non-cationized one.

using inductively coupled plasma and the antibacterial activity of the samples was studied on Escherichia Coli bacteri," he added.

The results show that the adsorption of silver nanoparticles on cationic cotton is approximately three times more than on non-cationic cotton. Moreover, the samples synthesized at 80°C have more silver than those synthesized at 100°C.

The reason for the higher adsorption of nanosilver on cationized cotton is the change in the surface charges of cellulose. In addition, the type of nanoparticles' stabilizer changes the amount of adsorption. Furthermore, cationized cotton has a stronger antibacterial property in comparison to the non-cationized one.

The commercial cationic sample used in this research has a reasonable price and can be easily used in textile factories.

No Health Without Mental Health

UN Secretary-General Ban Ki-moon in his message on World Mental Health Day, October 10, called for a world without discrimination against those with mental illness and said there can be no health without mental health.

According to a press release issued by Tehran's UN Information Center on Saturday, the full text of his message is reproduced below, IRNA reported.

The Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights guarantee the right of everyone

to enjoy the highest attainable standard of physical and mental health, including medical care and services, without any discrimination.

The constitution of World Health Organization refers to the physical, mental and social aspects of our wellbeing, which are closely linked. Mental illnesses seriously affect our bodies and our social relationships, while physical health problems, especially when severe and protracted, can lead to social isolation and mental illness.

But many countries fall far short in

treating those suffering with mental illness—even though it is relatively inexpensive and easy to deliver. The vast majority of people with mental, neurological and substance use disorders do not receive even the most basic care. Yet such services are essential if we are to offer hope to some of the most marginalized people in the world, especially in developing countries, to live their lives in dignity.

The World Health Organization's Mental Health Gap Action Program is the global response to the high demand

for these health services. I call on all countries to embrace and fulfill the objectives of this program.

With proper care, tens of millions of people could be treated for depression, schizophrenia, epilepsy and other illnesses.

We must break down the barriers that continue to exclude those with mental or psychosocial disabilities. There is no place in our world for discrimination against those with mental illness. There can be no health without mental health.

Epileptic Seizures Predictable

A team of physicists, physicians and neuroscientists at the Bernstein Center of Freiburg University took a step towards the ambitious goal of predicting epileptic seizures, as published in the latest issue of the journal Epilepsia.

Professor Andreas Schulze-Bonhage, the head of Epilepsy Center at the University Hospital Freiburg, says, "Unfortunately, a considerable fraction of all epilepsy patients do not respond well to commonly used pharmaceuticals. For these patients, an automatic prediction of their suddenly occurring seizures would offer great benefit—they could prepare for the epileptic attack, for example by taking fast-acting medicine," ScienceDaily reported.

The scientists work on possibilities to detect seizure changes in the brain.

"In recent years, several methods were developed to calculate predictive features from the electroencephalogram, which measures brain waves," says Professor Jens Timmer, physicist at the Freiburg Institute for Advanced Studies. Yet, for individual prediction methods, no satisfactory performances could be observed up to now.

Within the framework of the European Union-funded project Epilepsiae, the research team studied

whether a combination of different prediction methods could help improve prediction performances. A warning is given only if two methods trigger alarms during a short interval of time.

The study was based on the registrations of the electroencephalogram from eight patients, measured directly at the cortex.

> Combination of Methods

On average, for all patients, the combination of methods yielded an increase in prediction performance by more than 50 percent, proving the approach to be auspicious.

"In our study, about every second seizure could be predicted correctly," says Hinnerk Feldwisch-Drentrup from the Bernstein Center. "While it is better than a random prediction, in the current state it seems not just yet to be sufficient for real clinical applications."

In order to investigate further possible improvements, the scientists compiled an extensive database of EEG recordings from currently 200 patients, together with partners in France and Portugal.

Additionally, real-time applications of their methods are planned to be studied in the near future.

