

INOTEX opens in Tehran

The eighth edition of the International Innovation and Technology Exhibition (INOTEX) opened in Tehran, capital of Iran, on Sunday.

The exhibition will run through June 12 at Tehran International Exhibition Center, ISNA reported.

INOTEX aims to provide unique opportunities for Iranian and overseas technologists and innovators to share their expertise and display their latest achievements in respective areas.



inotex.com

At the international exhibition, high tech companies, startups, accelerators, new businesses, investors, science and technology parks and investors are coming together in more than 400 pavilions.

A number of 30 events including B2B summits, meetings between startups and investors, free advice and etc. will also be held on the sidelines of the event to increase the efficiency of the exhibition.

According to the reports, 174 exhibitors including 82 abroad are participating at INOTEX 2019, which is a premier regional event for professionals engaged in technology and innovation.

Iran's Vice Presidency for Science and Technology, Presidential Center for Innovation and Technology Cooperation and Innovation Fund are the partners behind INOTEX.

The event will be also hosting the first Asia and Oceania Innovation Forum, attended by 62 guests from different countries.

Scientists split as genetics lab scales down animal tests

A row has broken out among scientists over the decision by one of the world's leading genetics laboratories — the Sanger Institute in Cambridgeshire — to close its animal breeding facility.

The Wellcome Trust, which runs the institute, has decided that the £30m animal laboratory, where mice, rats and zebrafish are bred for medical experiments, should be shut within the next three years, the Guardian reported.

It was set up 12 years ago and employs 70 staff. The institute — which played a leading role in the first sequencing of the human genome — said its scientists are now using fewer and fewer animals in their research.

"Our science strategy is changing. It is as simple as that," Jeremy Farrar, director of the Wellcome Trust, told the Observer.

"New laboratory techniques have recently been developed which mean we simply do not need the numbers of animals that were once required for our experiments. We still need animals for our research, but not as many as in the past."

As a result, the Sanger is seeking a partner organization that would provide an animal experimentation service for its scientists, though this will no longer be based at the institute.

But this approach has been questioned by other scientists.

"I think that the Sanger decision is disappointing," said geneticist Professor Ian Jackson, of Edinburgh University. "At present, techniques such as cell cultures cannot tell the whole story of what a mutated gene does. You need to observe what it does inside a living animal. A gene can have an unexpected impact in some organs."



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The use of animals in scientific experiments has been a cause of controversy for decades and has been opposed — sometimes violently — by activists. However, scientists have defended the practice on the grounds that it has led to significant medical advances, from the development of penicillin to the creation of drugs to treat breast cancer.

The crucial point is that animals like mice may have very different appearances from that of humans, but they share virtually the same set of genes. Almost every gene found in a mouse so far has been found in a closely related form in a human.

And the importance of this genetic similarity underpins the worries that some scientists have about the Sanger decision.

"We recently carried out experiments on mice in which we had disabled a random set of their genes and found several that, unexpectedly, affected their hearing," said Professor Karen Steel, of King's College London, whose current research focuses on deafness.

"These have been shown to affect humans in a similar way, which greatly helps us to understand deafness in men and women. You simply cannot make discoveries like that in a culture dish, and it is premature to move in that direction," she said.

Sanger scientists said they did not intend to halt all animal experiments but merely planned to carry out fewer procedures on living creatures. The development of techniques such as cells grown in culture and the creation of organoids, miniaturized versions of animal or human organs — such as the pancreas and kidney — now made it possible to think about reducing numbers of animal experiments, they argued.

"This is a positive story," Farrar said.

"The development of tissue culture and organoids has opened up the possibility of reducing animal experiments. It won't take away the need to carry out all such procedures, but it should help to keep them down."

This point was backed by Professor Mike Stratton, director of the Sanger.

"This has been a difficult decision," he said.

"However, we believe it is the best way to continue to deliver science and make discoveries that impact on human health."

Evolution or extinction: Where will the gene-editing revolution take us?

By Jaysree Pandya*

The gene editing revolution is here. While human evolutionary changes over the years happened naturally, slowly, and on their own timeline, recent advances in science and technology are on their way to fundamentally disrupt the very evolutionary process that has made us who we are as a species.

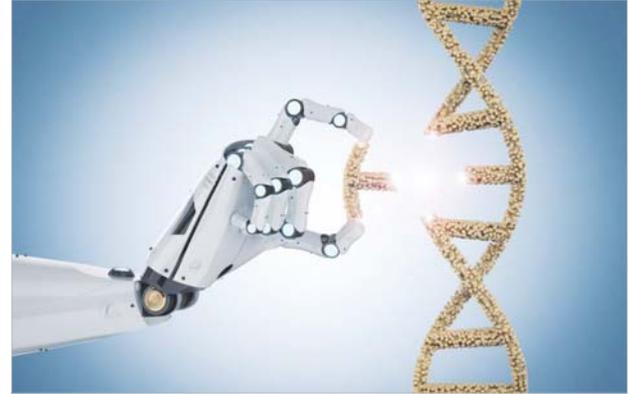
Today, gene modification tools like CRISPR-Cas9 allow genetic material to be inserted, deleted, modified, or replaced, giving humans the ability to change DNA with precision. Understandably, the emerging capability is generating a lot of excitement in the scientific and healthcare community as it can be effectively used not only for prevention and treatment of many human diseases, enhance intelligence, and more, but it also can potentially create new biological species and fundamentally disrupt the human evolutionary process.

Nations are already using gene editing tools for treating diseases, modifying plants and animals, and developing disease-resistant crops to designer babies. As all indicators point toward a gene-editing revolution, the question we need to evaluate is: Do we understand the implications, and are we ready?

Disrupting the process

Evolution is commonly understood to be a process of change over time. When applied to biology, evolution refers to changes in living organisms through random mutation and natural selection. As seen over the years, we humans have been shaping our own evolutionary process by how we eat, live, and reproduce. Now, as we seek to discover how natural evolution has shaped the potentials, tendencies, and limitations of the human species, the ongoing gene editing revolution will help us understand the roots of our physical, intellectual and emotional traits as well as our behavior.

In living biological species, DNA can either change by a process known as mutation or by gene editing. Since genes affect the body and behavior of any living species, gene editing and genetically inherited characteristics can influence



DEPOSITPHOTOS

the likelihood of any living biological species' evolution or extinction. Amidst that, as we experiment with evolution and get concerned about extinction, there are also some reports emerging of efforts toward de-extinction to bring back extinct animals. That brings us to an important question: Should we experiment with de-extinction?

Dual-use technology

There is no doubt that gene editing tools bring great potential for the future of humanity. However, it is a dual-use technology and can be used for both good and bad. While it will likely revolutionize disease treatment, perhaps enhance intelligence, and give control to humans to evolve on our terms and timeline, it can also become a powerful tool of destruction and maybe even extinction. The emerging potential of the "democratization of destruction" amidst a do-it-yourself movement is a cause of great concern as there is no way of knowing what changes are being made to the human or any living biological species genome, where, by whom, with what intention, and with what consequences.

The human ecosystem will inevitably move beyond natural evolution as scientists across nations are already using gene

editing tools like CRISPR-Cas9. Gene editing in human embryos is frankly a reality now, as gene editing, genome editing, or genomic engineering processes — in which DNA is inserted, deleted, modified, or replaced by making use of specific proteins that can cut DNA precisely in selected targeted locations — is already being reported from across nations. These examples already show us the potential for danger in gene editing. In 2018, He Jiankui, a now-disgraced Chinese scientist, announced that he had successfully used CRISPR to give two twin baby girls immunity against HIV. However, scientists worldwide condemned not only the ethical ramifications of his work but also the results, noting that he likely focused on too specific of a mutation to properly confer the babies immunity and that the gene he used has been linked with premature death.

That brings us to an important question: What security implications are emerging from gene editing, and are we prepared for the evolutionary implications?

Since DNA is involved in many biological processes: From building cells and controlling their number and type, to energy production, metabolism regulation, disease immunity, and so on, when gene

editing is on its way to disrupting fundamental biological processes, it is vital to understand and evaluate its risks by evaluating how genome editing is used today.

What next?

While the process of natural biological evolution involves a series of natural changes over time that causes a species to evolve, adapt to the environment, or become extinct, the question is whether the ongoing gene editing revolution accelerates our timeline of evolution or extinction.

We, informed, intelligent, and conscious individuals across nations, must control our species' evolutionary future. The scientist within us needs to be cautious of our actions with the human species (and any other biological species) and focus on security — to help us get through the expected turmoil brought on by gene editing tools, technological transformation, revolution, and evolution.

**Jaysree Pandya, the founder and CEO of Risk Group LLC, is a scientist, a visionary, an expert in disruptive technologies and a globally recognized strategic security thought leader and influencer. This article was first published in Forbes.*

South Korean telecom firms may suffer from cuthroat competition

SK Telecom, KT and LG Uplus are expected to see their balance sheets worsen in the coming quarter as a result of the cuthroat competition to attract more subscribers to their fifth-generation (5G) network services, analysts said Sunday.

The concern comes as the number of 5G service subscribers is expected to top the one million mark this week, Korea Times reported.

To leap ahead in the next-generation service, the mobile carriers have engaged in fierce competition as they have invested heavily in 5G network equipment and marketing.

Given they have been offering large subsidies to new subscribers to their 5G services, industry analysts said such negative factors will begin to be reflected in the second quarter of 2019.

Since the three mobile carriers launched the world's first commercial 5G services on April 3, the number of 5G subscribers reached 270,000 in April, according to company officials. They attracted about 507,000 more subscribers in May and the



apherald.com

figure is expected to surpass the one-million mark by mid-June.

The three mobile carriers have offered around 200,000 won in subsidies to those purchasing Samsung Electronics' 4G-enabled Galaxy S10 smartphone while they have given 720,000 won to customers who purchase the 5G-enabled version.

Industry analysts said it is inevitable for the mobile carriers to offer

more financial benefits because it is important to attract more subscribers to take the lead in the 5G race.

"The size of the subsidy for purchasing 5G-enabled smartphones is three times that offered to those buying 4G-enabled smartphones because they are putting more importance on raising the number of 5G subscribers in the early stages of the new network service," said Ko Eui-young, an

analyst of HI Investment & Securities. Sean Hwang, an analyst of Moody's, said SK Telecom's outlook remains negative due to several key downside risks including the cuthroat competition to acquire more 5G subscribers and spending for 5G network expansion.

"Key downside risks to this expectation include sluggish earnings as a result of stiff competition for 5G subscribers, a failure to improve profitability in non-telecom businesses, and higher-than-expected capital spending to accelerate its network expansion," Hwang said in a report.

Industry officials said the Korea Communications Commission (KCC), which has been criticized for just issuing a verbal warning to the carriers, may put the brakes on the excessive financial benefits.

The KCC gave the mobile carriers a warning in May when suspicions arose that they were offering illegal subsidies to new subscribers following the launch of LG Electronics' 5G smartphone.