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CONTENT

DRDO News

DRDO Technology News

THE NEW INDIAN EXPRESS

Fri, 17 July 2020

Tamil Nadu to tweak defence industrial policy to woo investments

It is learnt that Tamil Nadu is targeting investments worth USD 10 billion in the next five to 10 years in the six clusters identified in the state

By C Shivakumar

Chennai: In a bid to woo investments in the defence industrial corridor, Tamil Nadu government is planning to tweak the Aerospace and Defence Industrial Policy, which was unveiled at the Second edition of global Investors Meet, according to Chairperson and MD of TIDCO, Usha Kakarala.

For representational purposes

Kakarala spoke at the fifth edition – Virtual Conference on Aerospace & Defence Manufacturing Technologies with the theme of Empowering India with "Aatma Nirbhar Bharat Mission" organised by the Tamil Nadu Technology Development & Promotion Centre of Confederation of Indian Industry (CII) in partnership with Society of Indian Defence Manufacturers (SIDM) through a Virtual Platform.

The policy, which was unveiled by then Defence Minister Nirmala Seetharaman a year ago, will include more investment packages to woo investment in the defence corridor, a top official in the Industry department told *The New Indian Express*.

It is learnt that Tamil Nadu is targeting investments worth USD 10 billion in the next five to 10 years in the six clusters identified in the state.

The six clusters include Chennai, Coimbatore, Kancheepuram, Krishnagiri, Salem and Trichy.

The policy by Tamil Nadu stresses on the need to create an end to end ecosystem for aerospace sector development covering design, engineering and manufacturing of aircraft for the civil and defence sector.

The plan is also to attract Original equipment manufacturers and Tier-1 suppliers and India majors as anchor units in the state by providing required facilities and support at competitive rates, the official said.

Dr G Satheesh Reddy, Secretary, Department of Defence, Research and development and Chairman, Defence Research and Development Organisation, highlighted that for India's technology base to grow; there is a need to develop technology in-house.

He highlighted that DRDO is filtering out the patents which are promising for the industry and added that 87 percent of Akash Missile System was developed where subsystems and technology came from the industry highlighting the success of public-private partnership.

There are a lot of schemes available which will support and handhold industries to do in house production.

Shripad Yesso Naik, Minister of State for Defence, said the Covid-19 has given opportunity for Tamil Nadu to attract new investment from companies in countries like Germany, Finland, Taiwan, France, Korea, Japan, China, the US, Australia, the UK and the Netherlands.

The government is focusing on developing a strong domestic capability in defence to give greater impetus for economic growth, skilled job creation in manufacturing and to support growth of domestic manufacturers and MSMEs.

https://www.newindianexpress.com/states/tamil-nadu/2020/jul/16/tamil-nadu-to-tweak-defence-industrial-policy-to-woo-investments-2170544.html

THE FINANCIAL EXPRESS

Fri, 17 July 2020

Wait for the CQBs for the Indian Army to get longer

With the border tensions along the Line of Actual Control between India and China and the constant terrorist attacks from Pakistan side, has made the Indian Army ensure that the procurement of CQBs for the troops is expedited

By Huma Siddiqui

The Indian Army has to wait a bit longer for getting 93,895 close-quarter-battle carbines (CQB) a deal which is worth $ 553.33 million. The deal which has been put on Fast Track Procurement (FTP) process is awaiting approval from the Defence Acquisition Council (DAC), which is now likely to meet in August. "The decision on the procurement from the UAE based Company was expected to be taken at the DAC meeting which took place in July. However, it did not make it to agenda for that meeting. Also, the Chief of Defence Services Gen Bipin Rawat wanted to know more about the urgency for procuring CQB. A top Infantry officer has made a presentation to the CDS last week on the urgent requirement of the CQBs and its importance for troops deployed in the Valley," top sources confirmed to Financial Express Online.

The Indian Army was looking for the CQBs to modernize its infantry arm.

With the border tensions along the Line of Actual Control between India and China and the constant terrorist attacks from Pakistan side, has made the Indian Army ensure that the procurement of CQBs for the troops is expedited. The Indian Army was looking for the CQBs to modernize its infantry arm. So far the UAE based company has not received the contract. Though there is no requirement for a DAC approval as it is coming through FTP route, the UAE company is stuck in procedural requirements.

Meanwhile …

European Company Thales with Indian company Bharat Forge has written to the Ministry of Defence (MoD) that they are willing to supply the CQBs at the price being offered by the UAE based company Caracal.

The Story So Far

As has been reported by Financial Express Online earlier, it has been more than 16 months since the UAE based Caracal Company after extensive trials was declared L1 for$ 553.33 million procurement.

An Oversight Committee which was tasked to submit its report on the issues raised by other companies who failed during trials, has done so.

The UAE based Caracal which was declared L1 has already and has been through the already been through the Commercial Negotiating Committee (CNC), and has completed the Acceptance Test Procedure report, and has submitted the documents required under the RfP.

While the company claims to be NATO compliant, the trials for the Indian requirement were extensively and carried out not only here in the country but outside as well in different terrains with Indian ammunition.

The deal has to happen through the FTP route which means that from the time the order is placed within one year the deliveries need to start.

Who all bid for this order?

The companies who failed to make the cut after extensive trials registered their complaints with the MoD against the UAE based company which was declared L1. To address these concerns raised by the South Korean Company S&T Motiv, and European Company Thales, a nine-member committee headed by an Indian Army Brigadier was set up.

Since the deal expected to be inked with the UAE Company is for 93,895 CQBs, concerns were also raised by others about its ability to supply within one year.

https://www.financialexpress.com/defence/wait-for-the-cqbs-for-the-indian-army-to-get-longer/2026179/

Fri, 17 July 2020

NSA Ajit Doval reviews outcome of Corps Commander-level talks between India, China

The outcome of the marathon 15-hour-long fourth round of Corps Commander-level talks between India and China was discussed by the China Study Group (CSG) headed by National Security Adviser Ajit Doval on Wednesday (July 16)

By Krishna Mohan Mishra

Highlights

1. ***The outcome of the fourth round of Corps Commander-level talks between India and China was discussed by the China Study Group (CSG) headed by NSA Ajit Doval on Wednesday.***
2. ***The CSG comprises the Cabinet Secretary, the Secretaries of Home, External Affairs and Defence as well as representatives of the Indian Army, Indian Air Force and Indian Navy.***
3. ***It will take a call on the 'further course of action' on the graded, mutual de-escalation along the Line of Actual Control (LAC) in Ladakh.***

The outcome of the marathon 15-hour-long fourth round of Corps Commander-level talks between India and China was discussed by the China Study Group (CSG) headed by National Security Adviser Ajit Doval on Wednesday (July 16).

The CSG comprises the Cabinet Secretary, the Secretaries of Home, External Affairs and Defence as well as representatives of the Indian Army, Indian Air Force and Indian Navy. It will take a call on the 'further course of action' on the graded, mutual de-escalation along the Line of Actual Control (LAC) in Ladakh - which may be a long-drawn process stretching into several weeks.

The Northern Army Commander, Lt Gen YK Joshi, is expected to brief the CSG on the developments along the LAC. Similar discussions are reported to have been held by the Chinese side after Tuesday's meeting in Chushul. The meeting of Lt Gen-level commanders ended at 2 am on Wednesday, indicating a partial progress.

Though the details of the dialogue between the two sides are not known, it is believed that the talks mainly focused on the second phase of disengagement along the Line of Actual Control (LAC). The talks were significant because this was the first meeting between senior officials of Indian and Chinese troops after the first phase of disengagement along LAC.

Chinese Foreign Ministry has said the talks would help in easing the border situation. Global Times also quoted the Chinese Foreign Ministry on Wednesday as saying "The border troops of

China and India held their fourth commander-level talks on Tuesday, with the two sides making positive progress in further disengaging the frontline troops in the western section of the border."

During the course of the intense and complex negotiations between senior commanders of the two armies that lasted nearly 15 hours, the Indian delegation apprised the Chinese People's Liberation Army about the "red lines" and conveyed that the onus was largely on China to improve the overall situation in the region, government sources told PTI in New Delhi.

The Indian delegation was led by Lt Gen Harinder Singh, the commander of the Leh-based 14 Corps, while the Chinese side was headed by the commander of the South Xinjiang military region Maj Gen Liu Lin.

https://zeenews.india.com/india/nsa-ajit-doval-reviews-outcome-of-corps-commander-level-talks-between-india-china-2296095.html

INDIA TODAY

Fri, 17 July 2020

Indian Army and PLA committed to complete disengagement: Army after military talks in Ladakh

Following the Corps Commander-level talks in Ladakh on Wednesday, the Indian Army has said India and China remain committed to the objective of complete disengagement

Following the Corps Commander-level talks in Ladakh on Wednesday, the Indian Army has said India and China remain committed to the objective of complete disengagement.

In a statement on Thursday, Army spokesperson Col Aman Anand said, “India and China have been engaged in discussions through established military and diplomatic channels to address the prevailing situation along the LAC.”

Indian Army has said troops of both sides are committed to complete disengagement. (PTI)

“Commanders from PLA and Indian Army held a meeting at Chushul, on Indian side, for the fourth round of talks on 14 July,” said the Army.

The Indian Army has further said that the engagement between the troops was “consistent with the consensus reached between the Special Representatives of India and China earlier on 05 July” to discuss complete disengagement.

“The Senior Commanders reviewed the progress on implementation of the first phase of disengagement and discussed further steps to ensure complete disengagement,” the Army has said.

“The two sides remain committed to the objective of complete disengagement. This process is intricate and requires constant verification. They are taking it forward through regular meetings at diplomatic and military level,” the Indian Army has said in its statement.

The Indian military conveyed a "very clear" message to the Chinese army during nearly 15-hour-long talks that status quo ante must be restored in eastern Ladakh and it will have to follow all mutually agreed protocols for border management to bring back peace and tranquillity along the Line of Actual Control, government sources said on Wednesday.

During the course of the intense and complex negotiations between senior commanders of the two armies that ended at 2 am on Wednesday, the Indian delegation also apprised the Chinese PLA about the "red lines" and conveyed that the onus was largely on China to improve the overall situation in the region, the sources said.

The talks were "very fruitful" and both sides agreed to begin phase two of the disengagement in the next few days, they said.

The fourth round of Lt General-level talks began around 11 AM on Tuesday at a designated meeting point in Chushul on the Indian side of the LAC.

https://www.indiatoday.in/india/story/indian-army-and-pla-committed-to-complete-disengagement-army-after-military-talks-1701156-2020-07-16

ThePrint

Fri, 17 July 2020

Galwan lesson for Indian soldiers: Don't wait for orders, just assume them

Indian soldiers and officers on the ground are the best judge of what action to take. They must not let the absence of an 'order' become a ground for 'inaction'

By Lt Gen Zameer Uddin Shah

Following the clash with Chinese soldiers in Ladakh's Galwan Valley, in which 20 Indian soldiers were killed, the Narendra Modi government has clarified that the troops were not unarmed. They were, in all likelihood, inhibited from using their weapons because the terms of engagement stipulated 'no escalation'. Here's the dictum Indian soldiers should follow if they find themselves in a situation like the one on 15 June: Don't wait for orders, just assume them.

When the lives of our brave-hearts are threatened, I see no reason why they should not defend themselves with their weapons. Strict adherence to the rules should be overridden by the initiative to act when orders don't exist.

The Galwan Valley clash is a good example of how sticking to 'stipulated rules' can go horribly wrong. Then there are instances when soldiers or officers on the ground, who are always the best judge of what action should or should not be taken, must give themselves the 'order' whose absence sometimes becomes a ground for 'inaction'.

Indian Army personnel keep vigilance at Bumla pass at the India-China border in Arunachal Pradesh (Representational Image) | Photographer: Biju Boro via Getty Images | Bloomberg

A case worth remembering

While adjudicating justice at the Armed Forces Tribunal, an appeal came up for consideration in 2009-10. A Junior Commissioned Officer (JCO), who had been dismissed from service for 'cowardice', appealed against the sentence. His stand was that he had been ordered to establish an ambush in an area in Jammu and Kashmir with several nullahs while a raiding party dealt with terrorists in a nearby jungle hideout.

The JCO was in radio communication with the raiding party. During the action, he received a radio transmission that clearly indicated that the terrorists were escaping via an adjoining nullah where there were no troops to ambush them. The JCO did not redeploy his patrol and the terrorists escaped.

He defended his 'inaction' by arguing that he had not received any orders to redeploy. His explanation was not accepted by his Commanding Officer, who said that the JCO did not act because he wanted to avoid a firefight with the terrorists. The JCO was court-martialled and dismissed from service.

The Armed Forces Tribunal heard his appeal but upheld the dismissal on the ground that the JCO was in radio contact and well aware of the progress of the raid, the action of the raiding party, and the escape route taken by the terrorists who ultimately managed to flee.

Clearly, if the JCO had 'assumed' the order to redeploy himself at the position where there was no ambush for the terrorists, he would have been able to prevent their escape. His argument that there was no 'order' for him to do so doesn't stand because an officer on the ground is expected to respond to the developing scenario. Not everything can be fed through an 'order'.

Taking the initiative

There have been many instances where unquestioned adherence to the instructions have been justified on the ground that there were 'no orders to the contrary'. It is essential that soldiers, when engaged in operations, take the initiative to act according to the situation.

In operations that involve dealing with terrorists or an enemy such as the People's Liberation Army (PLA) soldiers, any action, even if it later proves to be inadequate, is better than inaction. The armed forces condone any action done in good faith — but never inaction. This may appear over simplification to adherents of cast-iron orders. Battle situations, however, are fluid and taking initiative is an imperative.

(Lt Gen Zameer Uddin Shah PVSM, SM, VSM (retired) is a former Deputy Chief of Army Staff and the former Vice-Chancellor of Aligarh Muslim University. Views are personal.)

https://theprint.in/opinion/galwan-lesson-for-indian-soldiers-dont-wait-for-orders-just-assume-them/461058/

ZEENEWS

Fri, 17 July 2020

China refuses to back off from Finger 4 area in Ladakh, India increases deployment of tanks near LAC

Edited By Tanweer Azam

The simmering tensions between India and China along the Line of Actual Control in Ladakh could increase in the coming days as China has reportedly refused to back off from Finger 4 area in Pangong Tso. Indian Army is on high alert and has increased the deployment of tanks along East Ladakh border to ward off any threat from the China's People's Liberation Army.

Union Defence Minister Rajnath Singh is scheduled to visit Ladakh and Jammu & Kashmir on July 17-18. It is learnt that Chief of Northern Command Lt Gen YK Joshi has arrived in Delhi and it is expected that he would soon meet Prime Minister Narendra Modi and other senior government officials in order to apprise them about the situation along LAC.

Notably, the 14-hour-long fourth round of Corps Commander-level talks between India and China ended on Wednesday but sources said that during the talks China made it clear that it would not back off from Finger 4. Both India and China had reached an agreement to disengage in Galwan Valley, Hotsprings and Gogra and India has been demanding that Chinese troops must disengage from all the areas.

Keeping in mind the activities of Chinese army, Indian Army is on high alert and around 60,000 soldiers have been deployed in East Ladakh to stop the incursion of Chinese soldiers inside Indian territories. India has deployed Bhism tanks, Apache attack helicopters, Sukhoi fighter jets, Chinook and Rudra helicopters near the LAC to keep Chinese troops at bay.

Meanwhile, the China Study Group (CSG) headed by National Security Adviser Ajit Doval reviewed the outcome of the marathon 15-hour-long fourth round of Corps Commander-level talks between India and China on Thursday.

The CSG comprises the Cabinet Secretary, the Secretaries of Home, External Affairs and Defence as well as representatives of the Indian Army, Indian Air Force and Indian Navy. It will

take a call on the 'further course of action' on the graded, mutual de-escalation along the Line of Actual Control (LAC) in Ladakh - which may be a long-drawn process stretching into several weeks.

https://zeenews.india.com/india/china-refuses-to-back-off-from-finger-4-area-in-ladakh-india-increases-deployment-of-tanks-near-lac-2296131.html

ThePrint

Fri, 17 July 2020

Indian Army will need another division in Ladakh to keep China out, says retd Lt Gen Panag

Former Northern Army commander Lt Gen Panag also said the strategic Darbuk-Shyokh-Daulat Beg Oldie would be rendered non-operational in case of a war with China.

New Delhi: India will have to deploy another troop division to safeguard the Line of Actual Control (LAC) and prevent China from coming back once disengagement is complete in Eastern Ladakh, Lt Gen H.S. Panag (retd) said.

The former Northern Army commander said additional troops from the Leh-based 14 Corps should be deployed here.

The Army's 14 Corps has two divisions under it — one which looks after Siachen and the other which is posted along the Line of Actual Control with China.

Each division has about 10,000-12,000 men with artillery and other elements.

Panag also said that in case of a war, the strategic Darbuk-Shyokh-Daulat Beg Oldie (DSDBO) road would be rendered non-operational and even the airfield there would come under Chinese missile attacks.

He was speaking during an interaction for the launch of his book, *The Indian Army, Reminiscences, Reforms and Romance*, on ThePrint's e-venue *Soft Cover*.

Panag said China has been aggressive along the LAC in Ladakh because it believed New Delhi was building all-weather roads through the same route that the Indian Army used in 1962 to reach Galwan Valley, thereby threatening Aksai Chin.

"While the overall intent of China is to have hegemony over India, make India play the younger brother kind of the role … The Chinese are very sensitive to threats to Aksai Chin," he said, adding that even in 1962, the discussions of the Chinese politburo centred around India's plans against China.

"The two reasons cited (back then) was that India wanted Tibet's freedom, in fact to usurp Tibet, and second was that through the forward policy we are trying to gain more Chinese territory," he said. "This was the main theme in the politburo discussions."

Strategic DBO sector wouldn't count in a war

Talking about the strategic DSDBO road, Panag said the DBO sector has its own inherent weaknesses and there is no point in saying that we have an airfield there.

It would be rendered non-operational for India because the Chinese can easily observe the road from within their own side of the LAC if they sit on the heights. The same also applies to the Advance Landing Ground in DBO, which is less than 15 km from the LAC.

This means that it can be easily targeted by rockets which will render the airfield useless, Panag said.

“The DBO road cannot be used in operations because the Chinese have to just get on to the heights on their top,” he said. “Even in their own side of the LAC, they can observe the road and destroy the bridges and others with their rocket force.”

The airfield is just 15-20 km from the LAC, he said, putting it in the direct artillery range. “It will be rendered useless on the very first day of operations.”

Panag added that one should not talk about taking back lost territory without developing capability, an apparent reference to statements by BJP leaders, including Home Minister Amit Shah, who said that India will take Aksai Chin back.

‘Reasons behind the Chinese moves’

Explaining the strategic reasons behind the Chinese moves, Panag said the DBO is the western approach to Aksai Chin and Kongka La is the southern approach.

“From the area of Hot Springs and Gogra Post, there are two routes,” he explained. “One goes to the east to the Kongka La and from there to almost the eastern edge of the Aksai Chin. There is another route that goes from Hot Spring northwards. This route goes to the source of the Galwan river.”

Giving a historical perspective, he added, “What people don’t realise is that in 1962 when we established the Galwan Post, it was 80 km upstream. And the route that we took was from Hot Springs.

“So from Hot Springs we approached the source of the Galwan river, a little below it and established a post. We actually went and established the post in 1962 behind the Chinese. The direct access to Aksai Chin is from DBO and Galwan and hence the Chinese are very sensitive”.

He said the Chinese observed that India has built the DBO road and is making one in the Hot Springs area northwards, which would have taken Indians to the source of the Galwan river just like in 1962.

“What would be the end result? We will threaten the Galwan river deployment of the Chinese. We will once again get behind it,” he said. “Then the whole of Galwan Valley will be eventually taken by India.”

He said the fact that India was building access to the Galwan river from both sides — Hot Springs and confluence of the Shyok and Galwan — is the real reason why the Chinese have taken action.

He also said the Pangong Tso is being eyed by China because there is another route through Sirijap Post in the area to Aksai Chin.

https://theprint.in/defence/indian-army-will-need-another-division-in-ladakh-to-keep-china-out-says-retd-lt-gen-panag/461905/

THE TIMES OF INDIA

Fri, 17 July 2020

LAC face-off: Disengagement process intricate, needs constant verification, Indian Army says

New Delhi: The process of complete disengagement of troops in eastern Ladakh is "intricate" and requires constant verification, the Indian Army said on Thursday after the fourth round of marathon military talks between India and China.

The army said senior commanders of the Indian and Chinese military reviewed the progress on implementation of the first phase of disengagement and discussed further steps to ensure complete withdrawal of troops in the region.

The commanders held 15-hour-long negotiationsin Chushul on the Indian side of the Line of Actual Control (LAC) from 11am on Tuesday to 2am on Wednesday during which modalities for the complex disengagement process were extensively discussed.

"The senior commanders reviewed the progress on implementation of the first phase of disengagement and discussed further steps to ensure complete disengagement," the Indian Army said in a statement.

"The two sides remain committed to the objective of complete disengagement. This process is intricate and requires constant verification. They are taking it forward through regular meetings at diplomatic and military level," it said.

The Indian delegation was led by Lt Gen Harinder Singh, the Commander of the Leh-based 14 Corps, while the Chinese side was headed by Major General Liu Lin, Commander of the South Xinjiang military region.

The army also said the talks between the two sides were consistent with the consensus reached between the Special Representatives of India and China on July 5 to discuss complete disengagement.

National Security Advisor Ajit Doval held telephonic talks with Chinese foreign minister Wang Yi on July 5 on the disengagement process. Doval and Wang are special representatives on the boundary question between the two countries.

https://timesofindia.indiatimes.com/india/complete-disengagement-process-in-eastern-ladakh-intricate-needs-constant-verification-indian-army-after-sino-india-military-talks/articleshow/76996233.cms

The EurAsian Times

Fri, 17 July 2020

After US & Russia, China on verge of having a 'fully indigenous' 5th generation jet in J-20B

China joins Russia and the US after an upgraded version of the Chinese J-20B stealth fighter jet formally entered mass production. The modification has earned it the official recognition of being a fifth-generation fighter jet

Chinese stealth fighter jet – J-20B has undergone an upgrade to finally classify itself as a full-fledged fifth-generation aircraft. In doing so, it now aims to directly challenge the US dominance led by F-35 and F-22 fighter jets.

An upgraded version of the Chinese J-20B stealth fighter jet has formally entered mass production. The modification has earned it the title of being a fifth-generation fighter jet. Fifth-generation fighters are defined by their stealth technology, supersonic cruising speed, super manoeuvrability, and highly integrated avionics.

Although J-20 has been on active duty since 2017, western aviation experts had described the jet as a "dedicated interceptor aircraft" because of its lack of agility. The modified J-20B was unveiled earlier this week. The ceremony was hosted by many senior military leaders including the Central Military Commission (CMC) vice-chairman General Zhang Youxia.

Speaking at the event, Zhang, who is also in charge of weapons development for the People's Liberation Army, confirmed the mass production of the J-20B. He said that J-20B is now equipped with thrust vector control thus helping the jet achieve agility criteria required to 'classify' as a fifth-generation fighter jet.

Thrust vector control (TVC) allows pilots to better control the aircraft by redirecting engine thrust. Chinese advancement in TVC technology was first displayed in 2018 when Beijing debuted its J-10C multirole fighter at the air show in Zhuhai.

Besides challenging the US stealth fighter jets, the J-20s are anticipated to dominate the Asian skies and pose a direct challenge to soon to be acquired Japanese F-35s and Indian Rafale and other aircraft that New Delhi is in the process of acquiring.

J-20B vs F-35 and Rafale

The mass production of J-20B has handed a massive boost to the Chinese Air Force. With adversaries like India, Japan and South Korea equipped with modern fighter jets such as Dassault Rafale and Lockheed Martin F-35, the original Chinese J-20 did not offer much competition.

However, with the mass production of J-20B, the Chinese Air Force would now have an aircraft that levels the playing field in the Asia-Pacific. According to experts, the J-20B could give a stiff challenge to the F-35s but would simply overwhelm the Taiwanese F-16s.

As EurAsian Times reported earlier, the US recently approved the sale of 105 F-35 joint strike fighters to Japan at an estimated cost of $23 billion. The approved package includes 63 F-35A conventional takeoff and landing aircraft and 42 F-35 short takeoff and landing variants as part of a December 2018 decision by Japan to increase its procurement of F-35s from 42 to 147.

India is set to receive 36 Rafale from France and would be purchasing more hi-tech jets as part of the MMRCA contract. This led to Beijing speeding up its own fighter jet program, experts argue.

Although the current J-20B is currently powered by Russian Saturn AL-31 engines, Beijing aims to power the jet with its domestic WS-15 engine.

Chinese engineers have been developing high-thrust turbofan WS-15 engines for the J-20 and it is expected to be ready in the next one to two years. The ultimate goal is to equip the J-20B fighter jets with domestic engines.

Chengdu Aerospace Corporation (CAC), which manufactures the J-20s, has already received 'heavy orders' from the PLA. CAC set up its fourth production line in 2019, each one with a capacity to make about one J-20 a month.

Once China is able to power its J-20B fighter jet with Chinese made engines, it will only become the third country after the United States and Russia to have a fully indigenously developed fifth-generation fighter jet.

https://eurasiantimes.com/after-us-russia-china-to-have-a-fully-indigenous-5th-generation-jet-in-j-20b/

DefenceNews

Fri, 17 July 2020

From Singapore's Changi Naval Base to Oman's Duqm port, How is india countering Chinese string of pearls?

India's presence in Changi Naval Base in Singapore forms a significant counter to China's expansionist ambitions in the Indian Ocean. China's 'String of Pearls' strategy ensues establishing maritime bases in Sri Lanka, the Maldives, Pakistan, Bangladesh and Djibouti to enhance its influence and military network.

Indian PM Narendra Modi signed the India-Singapore Bilateral Agreement for Navy Cooperation in 2018 which allows Indian Navy ships logistical support, including refuelling at Singapore's Changi naval base located near the disputed South China Sea.

Changi Naval Base forms a strategic point in the 'Necklace of Diamonds' that India is creating to counter China's 'String of Pearls' strategy.

The 'Necklace of Diamonds' comprises Changi Naval Base in Singapore, Chabahar Port in Iran, the Assumption Islands in Seychelles, and Duqm Port in Oman. In addition to this, India is creating strong naval ties with Vietnam, Japan, France, Australia and the United States.

As EurAsian Times reported earlier, the Strait of Malacca is considered as one of the most important shipping lanes in the world. It is the primary shipping lane between the Indian and the Pacific Ocean which links major powers including China, Japan, India, South Korea, Malaysia.

Close to 100,00 vessels pass through it every year making it the busiest strait in the world. Through the Changi Naval Base agreement, India and Singapore will be able to engage more through the Strait of Malacca from where China's 80% of the oil imports pass, thereby making India's presence in the region a point of concern for China.

However, China's investment in its 'String of Pearls' is greater than India in its 'Necklace of Diamonds'. China has invested US$60 billion in Africa under its String of Pearls strategy, whereas India's largest investment for its Necklace of Diamonds amounts to $8 billion, in Chabahar Port in Iran.

Even that has landed badly for India as Tehran has decided to proceed with a vital railway project by itself citing delays from New Delhi. As earlier reported by EurAsian Times, New Delhi and Tehran were to construct the Chabahar-Zahedan railway line as "part of transit and transportation corridor in a trilateral agreement between India, Iran and Afghanistan".

Despite several site visits by Indian engineers, Delhi never commenced the work, apparently due to apprehensions that these could attract U.S. sanctions. However, the U.S. had provided a

sanctions waiver for the Chabahar port and the rail line to Zahedan, but it has been difficult to find equipment suppliers and partners due to concerns they could be targeted by the U.S.

China's Debt Trap Strategy

Another weapon that China has in its arsenal is the use of the deb trap strategy. China is able to gain influence across the world and grab considerable power in India's backyard by dispensing billions of dollars in the form of concessional loans to developing countries and then asking for geopolitical support in exchange for debt relief.

The latest example is the Island nation neighbouring India. Sri Lanka had relied heavily on China to construct $1.5 billion port in Hambantota in the country's south. After the port was operating at a loss and couldn't generate enough revenue to repay the loan to Beijing, the port was leased to China for 99 years in return for $1.1 billion which eased its position.

This allowed China to control over a key port positioned at the doorstep of its regional rival India and a strategic foothold along a key commercial and military waterway. Hence, due to the financial muscle, China's allies are likely to favour of Beijing instead of New Delhi.

Support from Other Countries

Amid the ongoing Covid-19 pandemic, economies of all the nations have become vulnerable. India's allies have not been able to free themselves from economic interdependence with China and hence, may not be able to give effective support to New Delhi.

India and China are supported by strong allies but the pandemic has made it challenging for any country to get into a cold war with China which supplies essential pharmaceutical products to nations worldwide.

Another factor that has stopped any country to get in trouble with China is the strong military that it possesses. In 2020, China had the largest active-duty military force in the world, with about 2.18 million active military personnel. India, the United States, North Korea, and Russia rounded out the top five countries with the largest active-duty military forces, according to Statista.

Even the Five Eyes seem hesitant to take action against China on the India-China border conflict fearing that it would be considered as an intrusion in the bilateral relations between India and China.

The Five Eyes comprise New Zealand, Australia, the US, Canada and the UK. US's State Secretary, Mike Pompeo went as far as saying that the US supports India's ban on certain mobile apps that can serve as appendages of the CCP's surveillance state but it still cannot be assessed as to how far this support will go.

UK and Australia have not shown any direct support for neither India. UK PM Boris Johnson described the situation as "very serious and worrying" and advised both countries to solve the issue "between them," thereby depicting the unwillingness of the UK to take a stand.

Australian Prime Minister Scott Morrison who is at loggerheads with China has also taken a neutral stand on the issue. There has been no official statement from New Zealand on the issue either.

Looking at the current situation, especially with the ongoing pandemic, it is safe to conclude that India's 'Counter String of Pearls' strategy to challenge China's influential networks needs massive financial investments and it is better for the US to tame the Dragon, for now.

https://www.defencenews.in/article/From-Singapore%e2%80%99s-Changi-Naval-Base-To-Oman%e2%80%99s-Duqm-Port,-How-Is-India-Countering-Chinese-String-of-Pearls-871660

THE HINDU

Fri, 17 July 2020

India and Israel sign agreement to expand cooperation in cyber security

The agreement was signed between the Director-General of Israel's National Cyber Directorate (INCD), Yigal Unna, and India's Ambassador to Israel, Sanjeev Singla

Jurusalem: India and Israel have signed an agreement to further expand collaboration in dealing with cyber threats amid rapid digitisation due to the coronavirus (COVID-19) pandemic that exposed the vulnerabilities of the virtual world.

The agreement was signed on Wednesday between the Director-General of Israel's National Cyber Directorate (INCD), Yigal Unna, and India's Ambassador to Israel, Sanjeev Singla.

'India competent enough to handle cyber security issues'

"Deepening cooperation with India is another important step in confronting global cyber threats," Mr. Unna said.

"The accelerated digitisation processes that accompany the enormous challenge of dealing with the COVID-19 epidemic and the increase in threats in cyberspace bring with them challenges and the need to quickly build protected services and systems," Mr. Unna told *PTI* after signing the agreement.

"Israel can contribute from its experience and can benefit from the vast experience gained in India in dealing with cyber attacks," he added.

Announcing the signing of the MoU on operational collaboration in cyber security, the Indian embassy's twitter handle described it as a "new normal" in "staying the course and reaching newer heights together".

Cyber security is a growing and natural area of close cooperation between India and Israel. It has been emphasised strongly by our two Prime Ministers. And its relevance has been underscored by the latest COVID-19 pandemic, Mr. Singla told *PTI*.

The MoU signed between the Indian Computer Emergency Response Team (CERT), a unit of the Ministry of Electronics and Information Technology, and INCD deepens the operational cooperation between the two sides and will expand the scope of exchange of information on cyber threats in order to raise the levels of protection in the field.

The agreement lays down the framework for dialogue, cooperation in capacity building, mutual exchange of best practices in the field and facilitates regular exchanges.

Cyber security was identified as an important area of cooperation during Prime Minister Narendra Modi's visit to Israel in July 2017 and an agreement was signed between the two sides during Israeli Prime Minister Benjamin Netanyahu's visit to India the following year.

"India and Israel have been cooperating in the cyber field since January 2018, so a new agreement is another opportunity to reaffirm the mutual commitment between the two countries. Since the initial agreement, professional seminars have been held among industry and government officials and many reciprocal visits have taken place," a press release by INCD said.

Several meetings have been held between the Indian and Israeli side since 2018 to strengthen cooperation in the field of cyber security.

Lt. General (Retd.) (Dr.) Rajesh Pant, National Cyber Security Coordinator (NCSC) of India had also visited Israel to attend the Cyber Week in June 2019.

The last five months of global lockdown has witnessed the expanding scope of the digital world and in the process, it has also exposed the vulnerabilities of protecting vital national infrastructure from the threat of cyber attacks.

https://www.thehindu.com/news/national/india-and-israel-sign-agreement-to-expand-cooperation-in-cyber-security/article32102730.ece

Thu, 16 July 2020

Researchers develop laser-based underwater Wi-Fi system for sub-sea data networks

By Darrell Etherington

A team of researchers working out of the King Abdullah University of Science and Technology (KAUST) have developed a two-way wireless data connection for use underwater. Strong wireless data connections are basically taken for granted in our daily lives, from cell service to home Wi-Fi networks, but it's actually tremendously challenging to create high-speed wireless connections in a medium like water. That could be very valuable for keeping underwater data centers connected with surface network infrastructure.

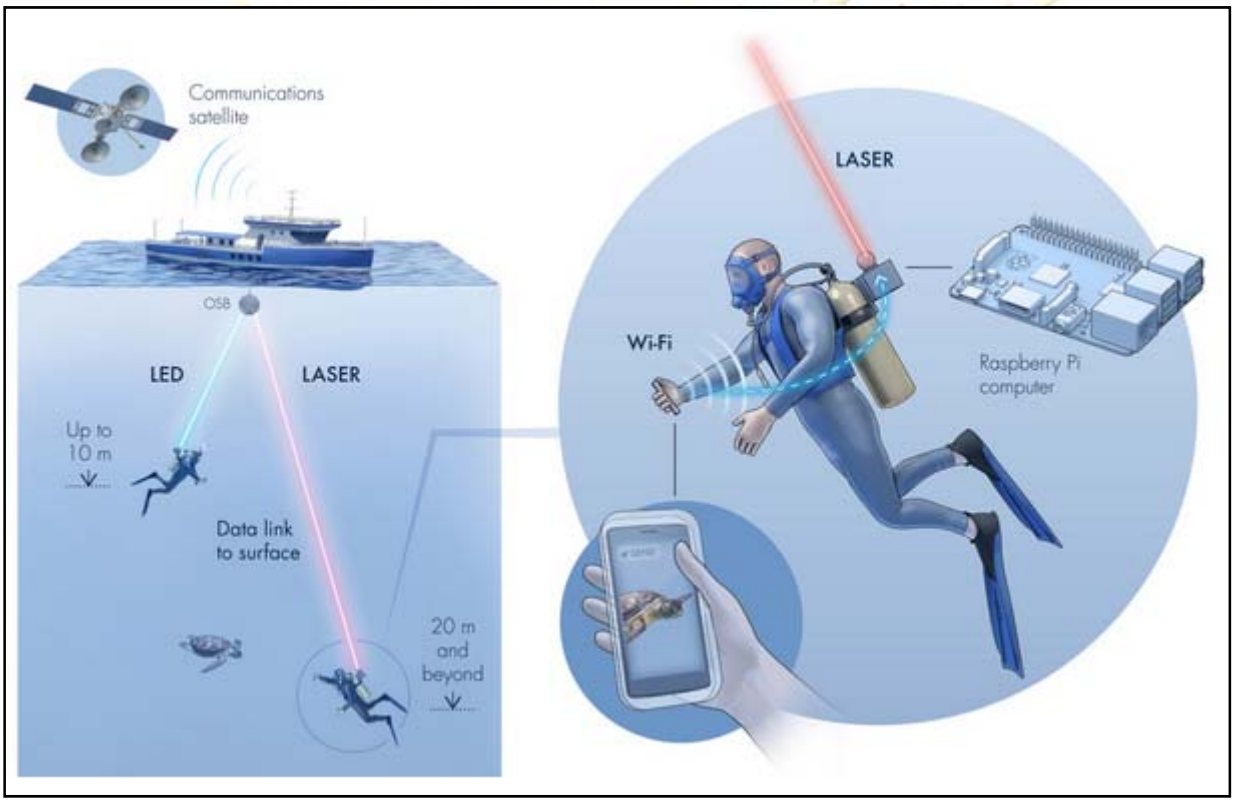


Image Credits: KAUST/Xavier Pita

KUAST's researchers approached the challenge using simple, readily available off-the-shelf components, including a Raspberry Pi that acts as the modem. They also built it to be compatible with existing 802.11 wireless standards, so that it can easily connect into the larger global internet for consistent and reliable connections.

The Raspberry Pi provides the compute needed to convert the standard wireless signal into one that can be transmitted optically via laser. The signal comes in over the air to a buoy at the ocean's surface, where the Pi then does the conversion and transmits the information via blue and green lasers, which then beam it down to an optical receiver located underwater, with a maximum practical transfer speed of 2.11 Mbps across a distance of 20 meters (around 66 feet).

The research team managed to use their system to do Skype calls and move files back and forth — but they also burned out the Raspberry Pi using lasers that overwhelmed its capabilities. This could be shored up by swapping in a dedicated optical modem, they said. A bigger problem that exists when using this so-called Aqua-Fi networking tech is dealing with the optical variation that can result underwater from currents and water movement.

To overcome those limitations, the team is considering a number of options, including a two-laser system in which a low-powered one plots the course for the more powerful data connection, and can readjust orientation if a connection fails. They could also broaden the receiver with an array of multiple receivers — similar to how MIMO antenna arrays work on modern networking hardware.

https://techcrunch.com/2020/07/15/researchers-develop-laser-based-underwater-wifi-system-for-sub-sea-data-networks/

ScienceDaily

Fri, 17 July 2020

Novel biomarker technology for cancer diagnostics

Summary:

A new way of identifying cancer biomarkers has been developed. The new technology allows very sensitive, quick and cost-effective identification of cancer biomarkers.

A new way of identifying cancer biomarkers has been developed by researchers at Lund University in Sweden. The new technology allows very sensitive, quick and cost-effective identification of cancer biomarkers. The research is published in *Nature Communication Biology*.

Today, every third person will get cancer in their lifetime, and the current trend suggests that in a few years that number will be one in two. If diagnosed earlier than today, a majority of cancer cases would have a much more favorable outcome for patients. WHO has projected that a third of all cancers could be cured if diagnosed already at tumor stage I/II, that is, asymptomatic patients.

CREATE Health Cancer Center at Lund university has in collaboration with Immunovia AB developed a new technology combining the specificity of antibodies with the sensitivity of next-generation sequencing. The technology will pave the way for the next generation of biomarker discovery program in cancer, where there is still a tremendous unmet need.

"We have for years been developing advanced diagnostic approaches for multiplexed analysis of serum proteins, using a single drop of blood, for the purpose of early diagnosis of complex disease, in particular cancer. There is massive amount of information in blood and our combination of proteomics and genomics will open up for rapidly associating early tumor development with protein signatures. This in turn will benefit the patients with a more favorable outcome and overall survival. We are very excited with this novel next generation of biomarker discovery tool," says Professor Carl Borrebaeck, director of CREATE Health Cancer Center at Lund University.

About the method

The novel approach, denoted ProMIS, Protein detection using Multiplex Immunoassay in Solution, circumvents the inherent technical problems in conventional biomarker research traditionally utilizing biomatrices, e.g. planar- or bead-based arrays, by instead profiling serum proteins in solution . Since the entire process can be performed in solution most inherent problems traditionally present using solid support is avoided. ProMIS utilizes scFv antibody fragments tagged with a DNA barcode. The barcoded scFvs are mixed with biotinylated serum proteins coupled to streptavidin-coated magnetic beads, and bound antibodies are detected, using next generation sequencing (NGS). The combination of proteomics (antibodies) and genomics (NGS) will uniquely result in both a multiplex and ultra-sensitive read-out which in turn will increase the possibilities and success rate to find tumors earlier. This will benefit both patient and society.

Story Source:

Materials provided by **Lund University**. *Note: Content may be edited for style and length.*

Journal Reference:

1. Mattias Brofelth, Anna Isinger Ekstrand, Shashank Gour, Ronnie Jansson, My Hedhammar, Björn Elleby, Anders Kvist, Christer Wingren, Ulrika Axelsson, Carl A. K. Borrebaeck. **Multiplex profiling of serum proteins in solution using barcoded antibody fragments and next generation sequencing**. *Communications Biology*, 2020; 3 (1) DOI: 10.1038/s42003-020-1068-0

https://www.sciencedaily.com/releases/2020/07/200715123149.htm

ScienceDaily

Fri, 17 July 2020

Researchers 3D print a working heart pump with real human cells

Summary:

In a groundbreaking new study, researchers have 3D printed a functioning centimeter-scale human heart pump in the lab. The discovery could have major implications for studying heart disease, the leading cause of death in the United States killing more than 600,000 people a year.

n a groundbreaking new study, researchers at the University of Minnesota have 3D printed a functioning centimeter-scale human heart pump in the lab. The discovery could have major implications for studying heart disease, the leading cause of death in the United States killing more than 600,000 people a year.

The study is published and appears on the cover of *Circulation Research*, a publication of the American Heart Association.

In the past, researchers have tried to 3D print cardiomyocytes, or heart muscle cells, that were derived from what are called pluripotent human stem cells. Pluripotent stem cells are cells with the potential to develop into any type of cell in the body. Researchers would reprogram these stem cells to heart muscle cells and then use specialized 3D printers to print them within a three-dimensional structure, called an extracellular matrix. The problem was that scientists could never reach critical cell density for the heart muscle cells to actually function.

In this new study, University of Minnesota researchers flipped the process, and it worked.

"At first, we tried 3D printing cardiomyocytes, and we failed, too," said Brenda Ogle, the lead researcher on the study and head of the Department of Biomedical Engineering in the University of Minnesota College of Science and Engineering. "So with our team's expertise in stem cell research and 3D printing, we decided to try a new approach. We optimized the specialized ink made from extracellular matrix proteins, combined the ink with human stem cells and used the ink-plus-cells to 3D print the chambered structure. The stem cells were expanded to high cell densities in the structure first, and then we differentiated them to the heart muscle cells."

What the team found was that for the first time ever they could achieve the goal of high cell density within less than a month to allow the cells to beat together, just like a human heart.

"After years of research, we were ready to give up and then two of my biomedical engineering Ph.D. students, Molly Kupfer and Wei-Han Lin, suggested we try printing the stem cells first," said Ogle, who also serves as director of the University of Minnesota's Stem Cell Institute. "We decided to give it one last try. I couldn't believe it when we looked at the dish in the lab and saw the whole thing contracting spontaneously and synchronously and able to move fluid."

Ogle said this is also a critical advance in heart research because this new study shows how they were able to 3D print heart muscle cells in a way that the cells could organize and work together.

Because the cells were differentiating right next to each other it's more similar to how the stem cells would grow in the body and then undergo specification to heart muscle cells.

Compared to other high-profile research in the past, Ogle said this discovery creates a structure that is like a closed sac with a fluid inlet and fluid outlet, where they can measure how a heart moves blood within the body. This makes it an invaluable tool for studying heart function.

"We now have a model to track and trace what is happening at the cell and molecular level in pump structure that begins to approximate the human heart," Ogle said. "We can introduce disease and damage into the model and then study the effects of medicines and other therapeutics."

The heart muscle model is about 1.5 centimeters long and was specifically designed to fit into the abdominal cavity of a mouse for further study.

"All of this seems like a simple concept, but how you achieve this is quite complex. We see the potential and think that our new discovery could have a transformative effect on heart research," Ogle said.

In addition to Ogle, Kupfer and Lin, other University of Minnesota researchers involved include University of Minnesota College of Science and Engineering faculty Professor Alena G. Tolkacheva (biomedical engineering) and Professor Michael McAlpine (mechanical engineering); University of Minnesota Medical School Associate Professor DeWayne Townsend (integrative biology and physiology); current and former University of Minnesota master's, Ph.D. students and postdocs Vasanth Ravikumar (electrical engineering), Kaiyan Qiu (Ph.D., mechanical engineering), and Didarul B. Bhuiyan (Ph.D.), Megan Lenz (M.S.), and Ryan R. Mahutga (biomedical engineering); and undergraduate student Jeffrey Ai (biomedical engineering). The team also included University of Alabama Department of Biomedical Engineering Professor and Chair Jianyi Zhang and University of Alabama biomedical engineering Ph.D. student Lu Wang and research associate Ling Gao (Ph.D.).

This research was primarily funded by the National Institutes of Health (National Heart Lung and Blood Institute, National Institute of Biomedical Imaging and Bioengineering, and National Institute of General Medical Science) with additional funding from the National Science Foundation Graduate Research Fellowship Project and the University of Minnesota Doctoral Dissertation Fellowship.

Story Source:

Materials provided by **University of Minnesota**. *Note: Content may be edited for style and length.*

Journal Reference:

1. Molly E. Kupfer, Wei-Han Lin, Vasanth Ravikumar, Kaiyan Qiu, Lu Wang, Ling Gao, Didarul B. Bhuiyan, Megan Lenz, Jeffrey Ai, Ryan R. Mahutga, DeWayne Townsend, Jianyi Zhang, Michael C. McAlpine, Elena G. Tolkacheva, Brenda M. Ogle. **In Situ Expansion, Differentiation, and Electromechanical Coupling of Human Cardiac Muscle in a 3D Bioprinted, Chambered Organoid**. *Circulation Research*, 2020; 127 (2): 207 DOI: 10.1161/CIRCRESAHA.119.316155

https://www.sciencedaily.com/releases/2020/07/200715131216.htm

EurekAlert!

Fri, 17 July 2020

Streamlining quantum information transmission

The quantum realm holds the key to the next revolution in communication technology as we know it. With the promise of unprecedented performance and impenetrable security, quantum technology is taking its first steps towards the ultimate goal of applications such as highly encrypted yet nearly fast-as-light financial transactions. However, the ability for quantum computers to communicate with one another has been limited by the resources required for such exchanges, constraining the amount of information that can be traded, as well as the amount of time it can be stored.

Researchers based in Japan have taken a major step toward addressing these resource limitations. They published their findings on May 27 in *Physical Review Letters*.

"To connect remote quantum computers together, we need the capacity to perform quantum mechanical operations between them over very long distances, all while maintaining their important quantum coherence," said Professor Kae Nemoto, paper author and director of the Global Research Center for Quantum Information Science at the National Institute of Informatics (NII) in Japan.

"However, interestingly, while quantum computers have emerged at the small scale, quantum communication technology is still at the device level and has not been integrated together to realize communication systems. In this work, we show a route forward."

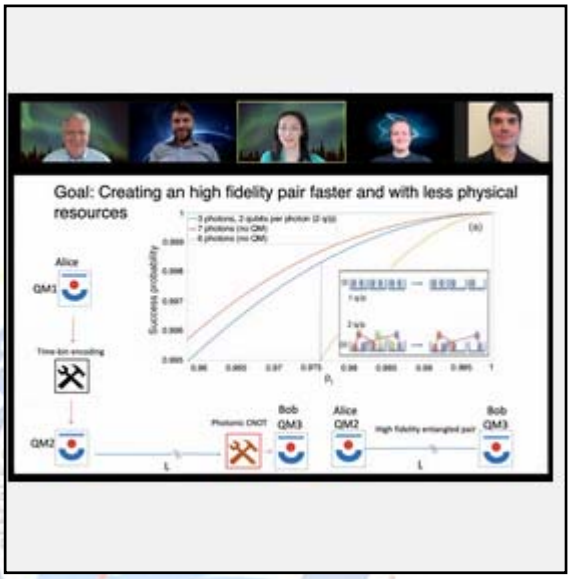


IMAGE: A tele-meeting with the results: from left, William J. Munro, Nicolò Lo Piparo, Kae Nemoto, Michael Hanks, and Claude Gravel. view more

Quantum information requires protection from the significant amount of noise surrounding it, as well as the tendency of information to be lost from the initial message. This protection process is called quantum error correction, which entangles one piece of information across many qubits, the most basic unit of quantum information. Imagine a letter torn into nine pieces, each placed in an envelope, with each envelope sent to the same destination to be re-assembled and read. In the quantum world, the envelopes are mailed via photons and there is enough information in each envelope to recreate the entire letter if any of the envelopes are lost or destroyed.

"The overhead to protect quantum information from noise and loss will be large, and the size of the required devices to realize this will cause serious problems, as we have started to see in today's quantum computer development," Nemoto said. "As the efforts to realize the quantum internet are occurring worldwide, it is important to think of it as a system, and not simple devices."

Nemoto and her team addressed this issue using a process called quantum multiplexing, in which they reduced not only noise, but also the number of resources needed to transmit information. In multiplexing, the information contained within two separate photons is combined into one photon, like two envelopes being sent in a portfolio, so the information is still individually protected but only one stamp is needed for transport.

"In this system, quantum error correction will play an essential role, not only of protecting the quantum information transmitted, but also for significantly reducing the necessary resources to achieve whatever tasks one needs," said paper co-author William J. Munro, a researcher at NTT's Basic Research Laboratories. "Quantum multiplexing enables significant resource reduction without requiring new technology to be developed for such quantum communication devices."

The researchers are currently extending their work to large-scale quantum complex network scenarios.

"The quantum revolution has allowed us to design and create new technologies previously thought impossible in our classical world," Nemoto said. "Small-scale quantum computers have already shown computing performance better than today's largest supercomputers. However, many other forms of quantum technology are emerging and one of the most profound could be the quantum internet - a quantum-enabled version of today's internet - which will allow us to network devices together, including quantum computers."

Next, the researchers will build upon the first steps they have already taken to increase both the amount of information and the storage time.

https://www.eurekalert.org/pub_releases/2020-07/rooi-sqi071620.php

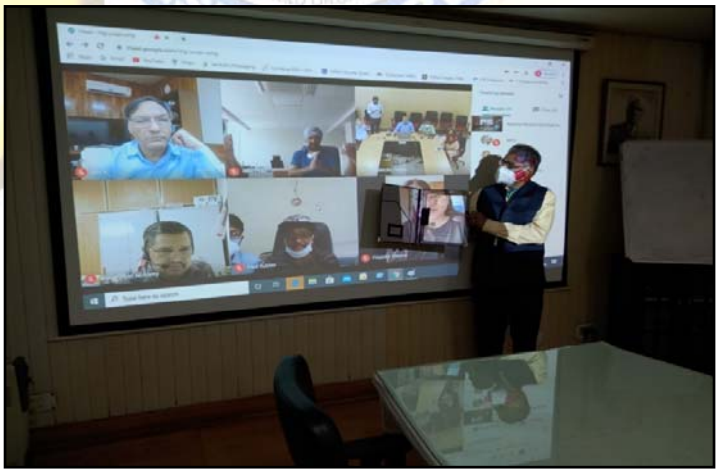
COVID-19 Research News

PSU Connect
News updates on PSUs

Fri, 17 July 2020

NRDC transfers two Covid-19 technologies

New Delhi: National Research Development Corporation (NRDC), an Enterprise of DSIR, Ministry of Science and Technology, Government of India has entered into an agreement with M/s Paulmech Infrastructure Pvt Ltd, Kolkata, to transfer two COVID-19 control technologies developed by S.N. Bose National Centre For Basic Sciences (SNBNCBS), Kolkata, an Autonomous Research Institute under the Department of Science and Technology, Government of India.



The two technologies developed by SNBNCBS and transferred by NRDC are:

1. Long-Lasting Nano-sanitiser with a Dispensing Antimicrobial Layer.

2. The Active Respirator mask is an innovative solution to the rebreathing of carbon dioxide, exhaled moisture, and sweaty and hot environment inside the mask. It also improved the clarity of speech of a person with a face mask and assures comfortable, hygienic breathing to protect the wearer from exposure to airborne contaminants.

The Long-Lasting Nano-sanitiser innovation is a solution to the problems caused by the use of the general sanitisers like dehydration of skin due to frequent use, and nature of instantaneous antimicrobial action of common sanitisers without protective role. This innovative sanitiser technology assures comfortable and hygienic hand sanitisation for a longer duration.

The agreement was signed by Dr. H Purushotham, CMD, NRDC and Shri Shanti Ranjan Paul, Director, M/s Paulmech Infrastructure Pvt Ltd online in the digital presence of Professor Ashutosh Sharma, Secretary, DST, Government Of India and Dr. Samit Kumar Ray, Director, S.N. Bose National Centre for Basic Sciences, Scientist Professor Samir Kumar Pal, Registrar Ms Shohini

Majumder, Nodal officer of Technical Research Centre (TRC) Dr. Soumen Mondal of S.N. Bose National Centre for Basic Sciences, Priyankan S. Sharma, Somavo Gupta of Paulmech Company and senior officials of NRDC. Use of these innovative products will help the users in overcoming the existing problems with masks and sanitisers available in the market. Prof. Ashutosh Sharma, Secretary DST congratulated all the stakeholders for bringing the fruits of Science and Technology to benefit society.

https://www.psuconnect.in/news/NRDC-Transfers-Two-COVID-19-Technologies/23747/

Business Standard

Fri, 17 July 2020

Oxford University Covid-19 vaccine raises hopes with strong trial results

Blood samples taken from a group of UK volunteers given a dose of the vaccine showed that it stimulated the body to produce both antibodies and killer T-cells

London: Researchers at the University of Oxford believe they may have a breakthrough in their search for a Covid-19 vaccine after the team discovered that the jab could provide "double protection" against the deadly coronavirus following early stage human trials, according to media reports in the UK.

Blood samples taken from a group of UK volunteers given a dose of the vaccine showed that it stimulated the body to produce both antibodies and killer T-cells, a senior source from the trial was quoted by The Daily Telegraph' as saying.

The vaccine development, by the university's Jenner Institute, is being supported by the UK government and AstraZeneca

The discovery is promising because separate studies have suggested that antibodies may fade away within months while T-cells can stay in circulation for years.

However, the source cautioned that the results, while extremely promising, did not yet prove that the Oxford vaccine provides long-lasting immunity against the deadly virus.

I can tell you that we now know the Oxford vaccine covers both bases it produces both a T cell and an antibody response. It's the combination of these two that will hopefully keep people safe. So far, so good. It's an important moment. But we still have a long way to go, the source said.

Another source close to the team described the presence of both antibodies and T-cells as a double defence against Covid-19. The Lancet' medical journal has confirmed that it would be publishing early-stage human trial data from the Oxford team on Monday.

David Carpenter, chairman of the Berkshire Research Ethics Committee, which approved the Oxford trial, said the vaccine team was "absolutely on track".

"Nobody can put final dates... things might go wrong but the reality is that by working with a big pharma company, that vaccine could be fairly widely available around September and that is the sort of target they are working on," he said.

The vaccine development, by the university's Jenner Institute, is being supported by the UK government and AstraZeneca, which will support the production phase.

The pharmaceutical company said last month that phase one trials were due to finish and a phase three trial had begun which will see the vaccine given to thousands of people so it can be tested for efficacy and safety.

The Covid-19 vaccine trial team have been working hard on assessing the safety and immunogenicity of ChAdOx1 nCoV-19, and preparing to assess vaccine efficacy, Sarah Gilbert,

professor of vaccinology at the university's Jenner Institute who is leading the research, had said back in May.

The vaccine, named ChAdOx1 nCoV-19, is based on a weakened version of the common cold that causes infections in chimpanzees. It also contains the genetic material of the spike protein of SARS-CoV-2 the strain of coronavirus that causes the Covid-19 illness.

The Oxford University vaccine is one of more than 100 in development as the novel coronavirus continues to spread infecting more than 13 million people and killing at least 582,000 worldwide.

https://www.business-standard.com/article/current-affairs/oxford-university-covid-19-vaccine-hopes-rise-with-strong-trial-results-120071600954_1.html

hindustantimes

Fri, 17 July 2020

Coronavirus: Scientists unsure whether recovered Covid patients lose immunity with time

Recent studies suggest that those recovering from COVID-19 may have antibodies for only a few months, a signal that long-term immunity is difficult to achieve, but some scientists disagree

New Delhi: Recent studies suggest that those recovering from COVID-19 may have antibodies for only a few months, a signal that long-term immunity is difficult to achieve, but several scientists dispel the gloom and say it is too soon to determine if such individuals can contract the disease again.

Some special cells of the immune system may still offer protection against the disease, the scientists said as questions swirl on whether people who have recovered from COVID-19 can get it again -- even those whose antibodies dwindle progressively as the days and weeks pass.

It is too soon to say whether people with lowered levels of novel coronavirus-blocking antibody levels (nAbs) after recovery are at risk of contracting the COVID-19 disease on re-exposure to the virus, Vineeta Bal, an immunologist from the Indian Institute of Science, Education and Research in Pune, told PTI.

“This pandemic is only six-seven months old, and reports of people testing positive for the virus for a second time, post-recovery, are mostly only from those who were first infected in January,” Bal said in a video interview.

The discussion – and disquiet amongst laypersons following news of the pandemic – intensified when a yet-to-be peer-reviewed study, published in medRxiv last week, assessed 90 recovered COVID-19 patients in the UK and found their nAbs decreased between two fold and 23-fold during an 18-65 day follow-up period.

Another study, published last month in the journal Nature Medicine, surveyed the levels of antibodies in COVID-19 patients, including those who did not show symptoms, and revealed that nAbs lasted only two to three months after recovery. While reports of people testing positive for re-exposure to the virus emerge, it does not necessarily mean that those losing nAbs will develop the disease, said Bal, who was a member of the Prime Minister’s task force for women in science under the Ministry of Science and Technology.

It might take a year to get sufficient data to confirm this.

While antibody levels, as indicated by the two studies, may decrease in recovered individuals, other immune system players may still offer longer lasting immunity.

“Some reports say detectable T cells which may fight off infection and prevent the COVID-19 disease on re-exposure, can offer protection,” Bal said.

Commenting on the implications of the studies, immunologist Satyajit Rath from the National Institute of Immunology in New Delhi, said the findings are in line with how the human immune system interacts with coronaviruses such as those causing the common cold.

In Rath's opinion, just like in other coronavirus infections, the more severe the COVID-19 disease, the higher the peak antibody levels' in patients as well as the tendency of their nAb levels to go down in weeks-to-months.

Asymptomatic infected individuals make very little nAbs to begin with, and may both recover and be protected by non-antibody-based mechanisms, he explained in an email interview.

"There is also some evidence that virus-specific T cells are activated and expanded in infected people, and they too can plausibly provide accelerated recovery re-infection," Rath said, adding a caveat that there is no direct evidence for such an actual causal relationship.

According to the immunologist, if antibodies do play a major role, the two studies could mean that long term immunity both individually, and for the population, may be difficult to achieve.

Under such a scenario, he said, people may periodically keep getting re-infected and the "virus may keep spreading around" until effective vaccines come into widespread use.

There is no good evidence yet about this, and it may or may not be the case, he said.

Another study, published in the journal Nature on Wednesday, also revealed the involvement of T cells.

The research, conducted by scientists from the Duke-Nus Medical School in Singapore, found that individuals infected with SARS-CoV-2, or the 2002-03 SARS pandemic virus, or other coronaviruses, develop memory T cells.

These coronavirus-specific T cells could last in the body for over 15 years after people recover from infection, and can still proliferate once they encounter a protein from that virus.

According to this study, patients who had recovered from the 2002-03 SARS virus 17 years ago still possess virus-specific memory T cells which cross-reacted with the current pandemic virus.

However, whether such pre-existing T cells affect the clinical manifestation of COVID-19 remains to be studied, said Nina Le Bert, a co-author of this study.

"However, if an individual already has memory T cells which recognise the new infection, the adaptive immune response could start earlier and may reduce the severity of COVID-19," she told PTI over email, wanting for more studies to confirm this.

According to Le Bert, the immune system is complex, and the different cell types usually complement each other.

"I believe that both cellular and antibody immunity will be equally important," she added.

Discussing the implications of the involvement of T cells in vaccine development, Bal said, "For a vaccine to be effective, it needs to generate reasonable concentration of nAbs and cytotoxic T cells." "Then they can kill viruses on re-exposure," she said, adding that the combination makes "two components of a perfect vaccine".

She cautioned that vaccines which rely more on cell mediated immunity may not be effective in every individual to the same extent, compared to those which boost an antibody response alone.

Bal explained that this is due to genetic diversity of the global human population.

"Human cells have surface proteins called HLA antigens which are different for every individual. So there is no way to trigger a cell mediated immune response in a universal vaccine that is generalisable to everyone," she said.

(This story has been published from a wire agency feed without modifications to the text. Only the headline has been changed.)

https://www.hindustantimes.com/health/coronavirus-scientists-unsure-whether-recovered-covid-patients-lose-immunity-with-time/story-69nNIDKlKft3rkJxKIzOgO.html