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# समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

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*Fri, 19 Feb 2021 3:29PM*

### Successful user trials of DRDO-developed Anti-Tank Guided Missile Systems 'Helina' and 'Dhruvastra'

Joint User Trials for Helina (Army Version) and Dhruvastra (Air Force Version) Missile Systems have been carried out from Advanced Light Helicopter (ALH) platform in desert ranges. The missile systems have been designed and developed indigenously by Defence Research and Development Organisation (DRDO).

Five missions were carried out for evaluating the missile capabilities in minimum and maximum range. The missiles were fired in hover and max forward flight against realistic static and moving targets. Some missions were carried out with warheads against derelict tanks. A mission was carried out against a moving target from a forward flying helicopter.

The Helina and Dhruvastra are third generation, Lock on Before Launch (LOBL) fire and forget Anti-Tank Guided Missiles that can engage targets both in direct hit mode as well as top attack mode. The system has all-weather day and night capability and can defeat battle tanks with conventional armour as well as with explosive reactive armour. It is one of the most-advanced anti-tank weapons in the world. Now, the missile systems are ready for induction.

Raksha Mantri Shri Rajnath Singh congratulated DRDO, the Army and Air Force for the achievements. Secretary Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy appreciated the efforts of teams involved in the successful trials.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1699376>





## डीआरडीओ द्वारा विकसित एंटी टैंक गाइडेड मिसाइल सिस्टम्स 'हेलिना' और 'ध्रुवस्त्र' का सफल उपयोगकर्ता परीक्षण

हेलिना (आर्मी वर्जन) और ध्रुवस्त्र (एयरफोर्स वर्जन) मिसाइल सिस्टम्स के लिए संयुक्त उपयोगकर्ता परीक्षण में एडवांस्ड लाइट हेलिकॉप्टर (एएलएच) प्लेटफॉर्म से डेज़र्ट रेंज में किए गए हैं। मिसाइल प्रणालियों को रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) द्वारा स्वदेशी रूप से डिजाइन और विकसित किया गया है।

न्यूनतम और अधिकतम रेंज में मिसाइल क्षमताओं के मूल्यांकन के लिए पांच मिशन संचालित किए गए। मिसाइलों को यथार्थवादी, स्थिर और चलते हुए लक्ष्यों के खिलाफ होवर और मैक्स फॉरवर्ड फ्लाइट में फायर किया गया। कुछ मिशन त्याग किए हुए टैंकों के खिलाफ वॉरहेड्स से किए गए थे। आगे उड़ने वाले हेलिकॉप्टर से चलायमान लक्ष्य के खिलाफ मिशन चलाया गया।

हेलिना और ध्रुवस्त्रा तीसरी पीढ़ी के, लॉक ऑन बिफोर लॉन्च (LOBL) फायर एंड फॉरगेट एंटी-टैंक गाइडेड मिसाइल हैं जो डायरेक्ट हिट मोड के साथ-साथ टॉप अटैक मोड दोनों में लक्ष्य पर निशाना साधने में सक्षम हैं। इस प्रणाली में सभी मौसम में दिन और रात वाली क्षमता है और पारंपरिक कवच वाले टैंक के साथ साथ विस्फोटक प्रतिक्रियाशील कवच वाले युद्धक टैंकों को पराजित करने की क्षमता भी है। यह दुनिया के सबसे उन्नत एंटी टैंक हथियारों में से एक है। अब मिसाइल सिस्टम को शामिल करने की तैयारी है।

रक्षा मंत्री श्री राजनाथ सिंह ने उपलब्धियों के लिए रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ), सेना और वायु सेना को बधाई दी। रक्षा अनुसंधान एवं विकास विभाग के सचिव और डीआरडीओ के अध्यक्ष डॉ जी सतीश रेड्डी ने सफल परीक्षणों में शामिल टीमों के प्रयासों की सराहना की।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1699418>





## **డీఆర్డీవో రూపొందించిన యాంటీ ట్యాంక్ గైడెడ్ మిస్సైళ్లు హెలినా, ధృవాస్త్ర పరీక్షలు విజయవంతం**

యాంటీ ట్యాంక్ గైడెడ్ మిస్సైళ్లయిన హెలినా (సైన్యం కోసం), ధృవాస్త్ర (వాయుసేన కోసం)కు అత్యాధునిక తేలికపాటి హెలికాప్టర్ (ఏఎల్హెచ్) నుంచి ఎడారిలో సంయుక్త వినియోగ పరీక్షలు నిర్వహించారు. ఈ క్షిపణులను స్వదేశీ పరిజ్ఞానంతో డీఆర్డీవో అభివృద్ధి చేసింది.

ఈ క్షిపణుల కనిష్ట, గరిష్ట స్థాయిల సామర్థ్యాలను తెలుసుకునేందుకు ఐదుసార్లు పరీక్షలు జరిపారు. వాస్తవమైన, కదిలే లక్ష్యాలపైకి ఆకాశంలో ఎగురుతున్న విమానాల నుంచి క్షిపణులను ప్రయోగించారు. అస్థిరంగా కదిలే ట్యాంకులపైకి వార్హెడ్లతో కూడిన క్షిపణులను కూడా కొన్నిసార్లు ప్రయోగించారు. ఎగురుతున్న హెలికాప్టర్ నుంచి కూడా కదులుతున్న లక్ష్యంపైకి ఒక ప్రయోగం చేపట్టారు.

హెలినా, ధృవాస్త్ర క్షిపణులు మూడో తరానికి చెందినవి. లాక్ ఆన్ బిఫోర్ లాంచ్ (ఎల్వోబీఎల్) వ్యవస్థతో కూడిన వీటితో నేరుగా లేదా గగనతలం నుంచి దాడి చేయవచ్చు. ఎలాంటి వాతావరణంలోనైనా, రాత్రయినా, పగలయినా పని చేస్తాయి. సాంప్రదాయ కవచంతోపాటు, పేలుడు ప్రతిస్పందన కవచంతో కూడిన యుద్ధ ట్యాంకులను ధ్వంసం చేయగలవు. ఇవి ప్రపంచంలోనే అత్యంత అత్యాధునిక ట్యాంకు విధ్వంసక క్షిపణులు. సైన్యం అమ్ములపొడిలో చేరడానికి సిద్ధంగా ఉన్నాయి.

క్షిపణుల ప్రయోగం విజయవంతంపై డీఆర్డీవో, సైన్యం, వాయుసేనను రక్షణ శాఖ మంత్రి శ్రీ రాజ్ నాథ్ సింగ్ అభినందించారు. ఈ ప్రయోగాల్లో పాల్గొన్న సిబ్బందిని రక్షణ శాఖ ఆర్&డీ విభాగం కార్యదర్శి, డీఆర్డీవో ఛైర్మన్ సతీష్ రెడ్డి ప్రశంసించారు.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1699521>

## Anti-tank missiles Helina and Dhruvastra successfully tested, ready for induction in armed forces

*Defence sources said joint user trials of Army version Helina and Air Force version Dhruvastra missile systems were carried out from the Advanced Light Helicopter (ALH) platform*

*By Hemant Kumar Rout*

India on Friday successfully test-fired the Army and Air Force versions of Anti Tank Guided Missiles (ATGMs) from desert ranges indicating the readiness of the weapon systems for an early induction in the armed forces.

Defence sources said joint user trials of Army version Helina and Air Force version Dhruvastra missile systems were carried out from the Advanced Light Helicopter (ALH) platform. Five missions were carried out for evaluating the capabilities of the missiles in minimum and maximum range.

Indigenously developed by the Defence Research and Development Organisation (DRDO), the missiles were fired in hover and max forward flight against realistic static and moving targets.

"A couple of missions were carried out with warheads against derelict tanks. A mission was also carried out against a moving target from a forward flying helicopter," sources said.

The helicopter launched Nag (Helina) is a third generation ATGM that can engage targets both in direct hit mode as well as top attack mode. The system, which operates on fire and forget mode, has all weather day and night capability.

The weapon system can defeat battle tanks with conventional armour as well as with explosive reactive armour. The missile will equip the weaponised version of the ALH Dhruv, HAL built combat helicopter Rudra and Light Combat Helicopter (LCH).

While the Nag missile has a maximum range of 4 km, the Helina has an extended strike range of about 8 km. Guided by imaging infrared seeker, the missile operates on lock-on-before launch mode, which helps extend its strike range.

Secretary of Department of Defence Research and Development and DRDO Chairman Dr G Satheesh Reddy said Helina is one of the most-advanced anti-tank weapons in the world. Now the missile systems are ready for induction, he said.

Union Defence Minister Rajnath Singh congratulated DRDO, the Indian Army and Indian Air Force for the successful trials.

<https://www.newindianexpress.com/nation/2021/feb/19/anti-tank-missiles-helina-and-dhruvastra-successfully-tested-ready-for-induction-in-armed-forces-2266170.html>



Helina being test fired from an advanced light helicopter on Friday (Photo | Special arrangement)



## **DRDO successfully test-fires indigenously developed anti-tank guided missile systems from an airborne platform**

*By Ravi Sharma*

In a major boost to indigenisation in the defence sector, the Defence Research and Development Organisation (DRDO), the Indian Ministry of Defence's (MoD's) research and development arm, successfully test-fired its indigenously developed anti-tank guided missile (ATGM) systems from an airborne platform on February 19. The joint user trials for Helina, the Army version of the anti-tank guided missile, and Dhruvastra, the Air Force version of the missile, were carried out from the Hindustan Aeronautics Limited (HAL) manufactured Rudra Advanced Light Helicopter (ALH) platform at the Indian military's test range at Pokhran in the Thar desert. Four Helina ATGMs were launched to evaluate their capabilities in the minimum and maximum range of seven km.



Helina ATGM being fired from Rudra helicopter in Pokhran on February 19. PHOTO. DRDO.

Both the Helina and Dhruvastra ATGMs are improved and advanced air-launched variants of the DRDO-developed Nag ATGM. To be used from helicopters, the basic technology has been borrowed from the Nag ATGM, which was developed in 2008. While the Nag is for use by mechanised infantry units against tanks and is launched from a tracked, amphibious, armored "missile-carrier" vehicle mounted on a Russian BMP chassis known as NAMICA (Nag Missile Carrier), the Helina and the Dhruvastra will be fitted on the Rudra ALH, the HAL designed and manufactured multi-role attack light combat helicopter.

Last September, India had successfully carried out the final trials of the Nag ATGM with a warhead. The NAG missile is a third-generation ATGM which has top-attack capabilities that can effectively engage and destroy all known enemy tanks. After the successful trials, the weapon system was inducted into mechanised infantry units of the Indian Army. The Army has for long been looking for third generation ATGMs with a strike range of over 2.5 km with fire-and-forget capabilities to take down advancing enemy tanks and other armoured vehicles. The MoD had, in 2018, cleared the acquisition of 300 Nag missiles and 25 NAMICAs for the Indian Army.

The DRDO has also been working on a portable variant of the Nag, designated as the man-portable anti-tank guided missile (MPATGM) with an engagement range of about 2.5 km.

The Helina and Dhruvastra are also third generation, Lock on Before Launch (LOBL), fire-and-forget ATGMs that can engage targets both in direct hit mode as well as top attack mode. One of the most advanced anti-tank operations in the world, the missile system has all-weather day and night capability and can defeat battle tanks with conventional armour as well as with explosive reactive armour. DRDO indicated that both the Helina and the Dhruvastra are ready for induction into the Armed Forces.

K. Tamilmani, a former Director General of the DRDO who had been closely associated with the initial flight evaluations of the Helina and the Dhruvastra from the ALH, told *Frontline* that the launch was a "very significant achievement". Said Tamilmani: "Initially we could achieve only a five-km range since we did not have any seeker beyond this range for lock-on before launch. But

the Army was insistent on a seven-km range and proceeded on a global search for it. But they could not procure it globally since there was no ATGM with a seven-km range readily available.”

This necessitated the stepping in of two DRDO’s laboratories, the DRDL Defence Research and Development Laboratory (DRDL) and the Research Centre Imarat (RCI). While the DRDL initiated development of a seven-km version of the two missiles, a seeker for this extended range was developed by the RCI. Both were successful. Said Tamilmani: “India now has an indigenous seven-km range ATGM. And there is tremendous potential for this ATGM to be exported.”

Official sources told *Frontline* that the trials could have been speeded up but for the fact that no Rudra ALHs were available to carry out the trials and because the firing range was busy with other trials.

<https://frontline.thehindu.com/dispatches/the-drdo-successfully-test-fires-indigenously-developed-anti-tank-guided-missile-systems-from-an-airborne-platform/article33888395.ece>

**TIMESNOWNEWS.COM**

Sat, 20 Feb 2021

## **Boost for Indian Army, IAF: HELINA anti-tank missiles successfully launched from ALH Dhruv helicopter**

***HELINA (HELicopter-launched-NAg) is third generation, lock on before launch (LOBL) fire and forget anti tank guided missile with both TOP attack and Direct attack capability.***

In a major boost for the Indian armed forces, four HELINA anti-tank missiles were successfully launched from Advanced Light Helicopter (ALH) Dhruv helicopter in Rajasthan sector on Friday. As per the Defence Research and Development Organisation (DRDO), four missions were carried out for evaluating missile capabilities in minimum and maximum range of 7 kms.

The final mission was carried out with warhead missile against a derelict tank. All the mission objectives were met, the DRDO officials said. The HELINA anti-tank missiles were test-fired during the joint user trials by the Indian Army and Indian Air Force (IAF).

"Joint User Trials for Helina (Army Version) and Dhruvastra (Air Force Version) Missile Systems designed and developed by DRDO were carried out from Advanced Light Helicopter (ALH) platform in desert ranges," DRDO tweeted.



**HELINA (Helicopter based NAG) is mounted on the Advanced Light Helicopter ([www.drdo.gov.in](http://www.drdo.gov.in))**

HELINA (HELicopter-launched-NAg) is third generation, lock on before launch (LOBL) fire and forget anti tank guided missile with both TOP attack and Direct attack capability. The missile has a maximum range capability of 7+ km. Eight HELINA missiles can be integrated on to ALH-WSI (Rudra), four on either side. A twin-launcher capable of carrying two ‘HELINA’ missiles is designed and there are four such launchers in full configuration, two on either side of the helicopter armament boom.

The weapon system has all weather day and night capability and can defeat battle tanks with conventional armour as well as explosive reactive armour.

A variant of HELINA Weapon System called Dhruvastra has been inducted into the IAF.

Earlier, Imaging Infra-Red (IIR) Seeker systems were successfully flight-tested in Anti-Tank Guided Missiles Nag, HELINA and MPATGM. IIR Seekers have also been successfully



demonstrated in the Exo-Atmospheric Interceptor PDV and Anti Satellite Test (ASAT), Mission Shakti.

<https://www.timesnownews.com/india/article/boost-for-indian-army-iaf-helina-anti-tank-missiles-successfully-launched-from-alh-dhruv-helicopter/722343>

**THE TIMES OF INDIA**

Sat, 20 Feb 2021

## Desi radar for 51% of Tejas fighters

By Chethan Kumar

In a major boost to indigenous defence technologies, at least 51% of the 123 LCA Tejas fighters that will be inducted into the Indian Air Force (IAF) will have the desi Uttam radar, replacing Israeli radars that the first batch of aircraft will be equipped with.

In all, IAF will get 123 Tejas fighters: 40 in initial and final operational clearance (IOC and FOC) configurations and 83 Tejas Mark-1A, orders for which were placed in the first week of February. While the first 40 will have mechanical radars (all Israeli), 83 Mk-1A planes will have Active electronically scanned array (AESA) radars.

“We will have the Uttam radar from the 21st Tejas Mk-1A to be produced. Uttam has performed better than anticipated in the trials so far. We’ve already signed an MoU with HAL,” DRDO Chairman Sateesh Reddy told TOI.

This means 63 of the 83 will be indigenous Uttam radars developed by LRDE (Electronics and Radar Development Establishment), a DRDO lab in Bengaluru. The TOI had reported in 2019 that Uttam radars were likely to replace the AESA radars — the EL/M 2052 — from Israeli firm ELTA.

This is in line with the Centre’s push for increasing indigenous content in defence equipment and will enable HAL to increase the same on Tejas from the present 52%.

R Madhavan, CMD, HAL, which is producing Tejas, said: “...That is what we are panning for. Given the delivery timelines we’ve committed to, we will place orders for 20 Israeli radars and Uttam should be ready thereafter. We are targeting to increase indigenous content in Tejas to 62% to 65%, and this will help achieving that.”

Uttam is a state-of-the-art AESA radar that can track multiple targets and take hi-resolution pictures to aid in reconnaissance. Seshagiri P, project director, Uttam, said it’s being tested on two LCAs — LSP2 and LSP3 — and one executive jet. Together they’ve completed around 230 hours of flying, including 30 on LCAs.

“On the LCAs, testing is for air-to-air mode at present. The range of the radar should be almost commensurate to launch a BVR (beyond visual range) weapon; it’s specified to be so. But we’re getting a range that’s better than that. We are a couple of sorties away from starting a joint evaluation. After this, it will be ready for user evaluation,” Seshagiri told TOI.

On the executive jet, Uttam’s tested three basic modes — air-to-air, air-to-sea and air-to-ground. “...The same needs to be ported on LCA and checked for performance. There’s a fourth mode called navigation terrain avoidance, weather mode (rain bearing clouds),” Seshagiri added.

According to LRDE, Uttam is a current generation system with features that allow aircraft to boast of low probability of intercept and non co-operative target recognition. “It provides better situational awareness of the battlefield scenario and is capable of tracking multiple targets with



high accuracy suitable for firing missiles and interleaved air-to-air, air-to-ground and air-to-sea modes for all terrain solutions,” LRDE said.

<https://timesofindia.indiatimes.com/india/desi-radar-for-51-of-tejas-fighters/articleshow/81140150.cms>

## Defence News

## Defence Strategic: National/International

# THE ECONOMIC TIMES

Sat, 20 Feb 202

## Navy Chief Admiral Singh reviews key aspects of TROPEX exercise

Leading Indian private defence major Larsen and Toubro (L&T) Thursday successfully completed delivery of the last and 100th K9 Vajra 155mm/52 calibre Tracked Self-Propelled Howitzer, which was flagged off by Army Chief General M.M. Naravane at Hazira near Surat in Gujarat.

Navy Chief Admiral Karambir Singh on Friday carried out a detailed review of a recently-concluded theatre-level naval exercise involving large number of warships, submarines and aircraft over a vast geographical expanse in the Indian Ocean Region, officials said. Key elements of the Indian Army, the Indian Air Force and the Coast Guard were also part of the biennial exercise that was billed as the largest drill conducted by the Indian Navy to validate its concepts of war-fighting across the entire spectrum of warfare.

Admiral Singh presided over the debriefing of TROPEX-21 (Theatre Level Operational Readiness Exercise) at Kochi and it was attended by several top commanders of the force, the officials said.

"The daylong review of the exercise by the Chief of the Naval Staff with all operational commanders examined the conduct of the exercise with the aim to draw lessons and to review doctrines and procedures along with a realistic audit of the deployment philosophy and fighting capability," a Navy spokesperson said.

He said the lessons learnt from the exercise will provide the planners accurate assessments to fine tune force structuring, warfighting concepts, operational logistics as also material and training imperatives.

The exercise took place at a time China has been making increasing forays into the Indian Ocean region as part of its offensive military manoeuvre.

It had commenced in January and continued in phases before it concluded a few days back. The exercise was spread over the vast geographical expanse of Indian Ocean and its adjunct waters and scenarios for the drills centred around the extant geopolitical situation in the region.



Admiral Singh presided over the debriefing of TROPEX-21 (Theatre Level Operational Readiness Exercise) at Kochi and it was attended by several top commanders of the force, the officials said.

"The exercise was aimed at validating Indian Navy's operational philosophy across the entire spectrum of conflict-ranging from addressing low end sub-conventional challenges to high end conventional threats," the spokesperson said.

He said live combat firings of missiles and torpedoes were also undertaken from warships, aircraft and submarines in complex multi-threat scenarios.

As a prelude to the exercise, a coastal defence exercise - Sea Vigil was conducted in mid January which witnessed participation of all stakeholders including the Coast Guard, port authorities, shipping and fishing communities among others.

This was followed by an amphibious exercise (AMPHEX- 21) in which Indian naval amphibious ships, units of the Indian Army and Indian Air Force undertook joint exercise in the Bay of Bengal and Andaman sea.

"AMPHEX- 21 saw several 'firsts' and strengthened joint war fighting capabilities and standard operating Procedures towards enhancing operational synergy amongst the services," the official said.

The amphibious exercise was aimed at validating India's capabilities to safeguard the territorial integrity of its island territories and enhance operational synergy and joint warfighting capabilities amongst the three services.

<https://economictimes.indiatimes.com/news/defence/navy-chief-admiral-singh-reviews-key-aspects-of-tropex-exercise/articleshow/81114442.cms>



Sat, 20 Feb 2021

## IAF deploys Apache Choppers to guard borders with China in Sikkim

*On Thursday, the Apache helicopter was first flown during the visit of Air Marshal Amit Dev, Air Officer Commanding in Chief of the Eastern Air Command, at their forward base in North Sikkim district.*

*By Ratnadip Choudhury*

The Indian Air Force (IAF), in a first, on Thursday deployed its most advanced Apache fighter helicopters in Sikkim, a frontier state with China. Two of four districts in Sikkim - North and East Sikkim - share boundaries with China along the eastern sector of the Line of Actual Control, along with Arunachal Pradesh.

On Thursday, the Apache helicopter was first flown during the visit of Air Marshal Amit Dev, Air Officer Commanding in Chief of the Eastern Air Command, at their forward base in North Sikkim district, a few kilometers from the Line of Actual Control.

"During the visit, he also interacted with the aircrew of Apache unit, which has been deployed in the Eastern sector for the first time," a press statement said.

This was one of the 22 Apache helicopters India had procured from American aircraft manufacturer Boeing, along with 15 Chinooks, by signing a multi-billion dollar contract in September 2015.

India is one of the 17 nations to select the Apache and has the most advanced variant, the AH-64E Apache. Apache helicopters have been modified according to the needs of the IAF.



It is a twin-turboshaft attack helicopter with a tailwheel-type landing gear arrangement and a tandem cockpit for a crew of two. Among other features, it has a nose-mounted sensor suite for target acquisition and night vision systems among other features.

The Air Marshal, during his two-day visit, also interacted with senior army officers and discussed ways to synergise and support the efforts of the army, along with reviewing operation preparedness.

India is one of the 17 nations to select the Apache and has the most advanced variant.

<https://www.ndtv.com/india-news/iaf-deploys-apache-choppers-to-guard-borders-with-china-in-sikkim-2374015>

## R. REPUBLICWORLD.COM

Sun, 21 Feb 2021

# Sonam Wangchuk showcases Solar-heated Tent for Indian Army at Galwan; Here's what it does

*Ladakh-based engineer & education reformist Sonam Wangchuk has built a solar-powered military tent for the Indian Army at the Galway Valley*

*By Koushik Narayanan*

Ladakh-based engineer & education reformist Sonam Wangchuk has built a solar-powered military tent for the Indian Army at the Galway Valley. Wangchuk, who had previously succeeded in his solar-heated mud hut project, built a tent that could accommodate 10 jawans and is fully portable with the weight of the tent being less than 30 kilos. Sharing photos of the solar-powered tent, Wangchuk revealed that the tent could sustain even under sub-zero temperatures such as minus 14 degrees Celcius while pointing out that it was carbon neutral, replacing kerosene and tackling pollution.



Meanwhile, Sonam Wangchuk on Friday informed that his Twitter account had been hacked but was later restored. The hacked Twitter account displayed random tweets shared from Sonam Wangchuk's handle. Taking to Twitter, the innovator stated that he was clueless about who was responsible for hacking his account. Even so, he also acknowledged that it took weeks to restore it. In addition, he also informed users that he was back and handling the account himself. The hacked account displayed a fraud link which showed that Elon Musk was giving away free Bitcoins.



## 10th round of India-China talks

Meanwhile, the 10th round of talks between India and China at Moldo lasted for over 16 hours, with delegations of both sides deliberating on the disengagement process. The tenth round of Commander-Corps level talks, which began at 10 am on Saturday, went on past 2 am as both sides discussed the disengagement from friction points including Gogra heights, Hot Springs, and Depsang plains. The Indian delegation led by Lt Gen PGK Menon, the Commander of the Leh-based 14 Corps maintained the need for an increase in the pace of disengagement in order to de-escalate the situation at friction points. The Chinese delegation was headed by Maj Gen Liu Lin, the commander of the South Xinjiang military district of the People's Liberation Army (PLA).

Earlier this week, the Indian Army released short videos and photographs showing thinning down of troops and dismantling of bunkers, camps, and other facilities by the Chinese military in the areas around the Pangong lake in eastern Ladakh in line with the agreed disengagement process between the two sides. The visuals also showed the Chinese People's Liberation Army(PLA) using a bulldozer to flatten some structures, and vehicles with troops and equipment preparing to retreat to rear bases as part of the infantry disengagement. After nine months of border standoff in eastern Ladakh, the two armies reached an agreement on disengagement in the North and South banks of Pangong lake that mandates both sides to cease forward deployment of troops in a "phased, coordinated and verifiable" manner.

### China unveils details of casualties at Galwan Valley

China admitted for the first time that the People's Liberation Army (PLA) lost four of its soldiers in the Galwan Valley clash with India last year near the LAC. According to a report by state-controlled People's Daily, "Four Chinese soldiers, who were sacrificed in last June's border conflict, were posthumously awarded honorary titles and first-class merit citations, Central Military Commission announced Friday. A colonel, who led them and seriously injured, was conferred with an honorary title." As per a report in CCP's mouthpiece Global Times, "The Central Military Commission awarded Qi Fabao, the regimental commander from the PLA Xinjiang Military Command, the title of "Hero regimental commander for defending the border," Chen Hongjun with "Hero to defend the border," and awarded the first-class merit to Chen Xiangrong, Xiao Siyuan and Wang Zhuoran."

<https://www.republicworld.com/india-news/general-news/sonam-wangchuk-showcases-solar-heated-tent-for-indian-army-at-galwan-heres-what-it-does.html>



Sun, 21 Feb 2021

## Solar-Heated Tent for Indian Army: Sonam Wangchuk, the real-life Phunsukh Wangdu's innovative gift for jawans in Ladakh

*Solar-Heated Tent For Indian Army: The weight of the tent is said to be less than 30 kilos.*

*Edited By Surabhi Shaurya*

New Delhi: Sonam Wangchuk, the man behind the character of 'Phunsukh Wangdu' in the Bollywood blockbuster '3 Idiots' has found a solution to keep the Army jawans stationed in the Ladakh region warm. Well, he has built a solar-powered portable military tent for the soldiers that could accommodate 10 jawans at a time. The weight of the tent, he claimed, is less than 30 kilos.

The innovator and education reformist further said that the military tent could work even under sub-zero temperatures such as -14 degrees Celcius.

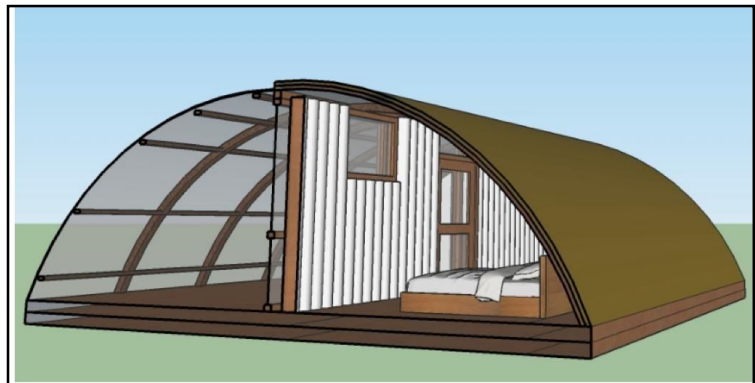
“SOLAR HEATED MILITARY TENT for Indian Army at Galwan Valley +15 C at 10 pm now. Min outside last night was -14 C, Replaces tons of kerosene, pollution climate change. For 10 jawans, fully portable all parts weigh less than 30 Kgs”, he tweeted.

### Who is Sonam Wangchuk?

Born on September 1, 1966, Sonam Wangchuk is an Indian engineer, innovator, and education reformist. He is the founding-director of the Students’ Educational and Cultural Movement of Ladakh (SECMOL), which was founded in 1988 by a group of students who had been in his own words, the ‘victims’ of an alien education system foisted on Ladakh.

He is also known for designing the SECMOL campus that runs on solar energy and uses no fossil fuels for cooking, lighting or heating.

Wangchuk was instrumental in the launch of Operation New Hope in 1994, a collaboration of government, village communities and the civil society to bring reforms in the government school system. He invented the Ice Stupa technique that creates artificial glaciers, used for storing winter water in form of conical shaped ice heap.



### Wangchuk’s Call to Boycott Chinese Products

Following tensions between India and China, the Ladakh-based educational reformer had appealed and asked Indians to boycott all Chinese companies.

In a tweet, he asked people to boycott all Chinese products to stop Beijing’s “bullying” in Ladakh and liberate 1.4 billion bonded labourers in the country.

<https://www.india.com/news/india/solar-heated-tent-for-indian-army-sonam-wangchuk-the-real-life-phunsukh-wangdus-innovative-gift-for-jawans-in-ladakh-anand-mahindra-reacts-pics-inside-4439057/>



## Atmanirbhar Bharat: GSL builds Damage Control Simulator for the Indian Navy at Port Blair

*The contract for this was signed in August 2020 between GSL and the Indian Navy which will be used for training the crew to not only contain damage, but also in how to respond to the threat with efficiency.*

*By Huma Siddiqui*

The Indian Navy will soon get a State-of-the-Art Damage Control Simulator (DCS) which is going to be built indigenously by the Goa Shipyard Limited (GSL).

On Saturday, the foundation stone for Damage Control Simulator for Indian Navy at Port Blair was laid by the Commander in Chief, Andaman and Nicobar Command Lt Gen Manoj Pande, and the CMD of Goa Shipyard Ltd Cmde B B Nagpal (Retd), was present also present.

### More about the state-of-the-art Damage Control Simulator (DCS)

This is another step towards new technology enabled products for the armed forces. The contract for this was signed in August 2020 between GSL and the Indian Navy which will be used for training the crew to not only contain damage, but also in how to respond to the threat with efficiency.



With the contract from the Indian Navy, tints position in supplying the DCS.

According to GSL, this DCS is a training system which will simulate a realistic and stressful but controlled environment for the crew in the ship. This will help in training the crew in repairing in various damage scenarios.

Why? Because in a real-life operational service, the ships do get damaged in both war and peace time. And to handle such situations, the crew needs to be aware of the process of containing the damage, save the vessel and most importantly on how to respond to the threat with efficiency, expertise and confidence. And this is possible only they get trained in similar situations on the simulator. And, the DCS help in inculcating the ability to “think on their feet” amongst the trainees

and will also contribute towards improving their team building skills, and to prepare them for the emergencies at sea.

### **GSL & Simulators**

With the contract from the Indian Navy, its position in supplying the DCS. Till date GSL has built six simulators of different types for the Indian Armed Forces and has exported one simulator to a neighbouring country.

### **Major Projects being executed by GSL**

In the Shipbuilding domain, the construction of the Advance Missile Frigate Project has started in coordination with Russia. This, according to GSL, is an Import Substitution project and is expected to help in boosting indigenization and promote MSMEs in the shipbuilding sector not only in Goa but across the country.

The shipyard is also in the process of completing the ongoing 5 Coast Guard OPV project this year. Two OPVs have already been delivered to the Indian Coast Guard and is also constructing Pollution Control Vessels for the Indian Coast Guard.

As has been reported earlier by the Financial Express Online, the shipyard is building 12 Advanced Fast Interceptor Crafts for the Indian Army and these are designed for operations at high altitude areas.

### **Commercial Shipbuilding**

It is also executing projects for Assam Government, Uttar Pradesh Tourism, and Lakshadweep Administration.

<https://www.financialexpress.com/defence/atmanirbhar-bharat-gsl-builds-damage-control-simulator-for-the-indian-navy-at-port-blair/2198714/>

## **THE ECONOMIC TIMES**

Sat, 20 Feb 2021

### **India sends Naval ship to UAE for participation in military exhibitions**

*Indian Army is internally looking at the possibility and practicality of having a light tank, which could come handy in situations similar to Ladakh stand-off.*

*By Snehash Alex Philip*

India has sent a warship to Abu Dhabi to participate in two naval defence exhibitions from February 20 to 25, in reflection of its gradual expansion of military cooperation with the United Arab Emirates.

The ship Pralaya arrived in Abu Dhabi on Friday to participate in the naval defence exhibition (NAVDEX 21) and international defence exhibition (IDEX 21), officials said.

"Participation of an Indian Navy ship in NAVDEX 21 and IDEX 21 also highlights close relations between India and UAE," said a senior official of the Indian Navy.

Chief of Army Staff Gen MM Naravane visited the United Arab Emirates (UAE) in December last in the first ever visit by a head of the 1.3 million strong Army to the strategically important Gulf nation.

Gen Naravane held extensive talks with senior military officials of the UAE and discussed avenues for enhancing bilateral defence cooperation.



Indian Naval Ship Pralaya arrived in Abu Dhabi, to participate in the NAVDEX 21 (Naval Defence Exhibition) and IDEX 21 (International Defence Exhibition), scheduled from 20 to 25 February

INS Pralaya, the second ship of the indigenously-built Prabal class missile vessel and it is fitted with an impressive array of weapons and sensors including cha launchers and long range surface-to-surface missiles. Officials said the ship is a versatile platform capable of performing a wide variety of surface warfare missions.

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<https://economictimes.indiatimes.com/news/defence/india-sends-naval-ship-to-uae-for-participation-in-military-exhibitions/printarticle/81123665.cms>

# THE ECONOMIC TIMES

Sun, 21 Feb 2021

## Australia posts liaison officer at Indian Navy's Information Fusion Centre

### Synopsis

*The Indian Navy established the 'Information Fusion Centre -- Indian Ocean Region (IOR) in 2018 to effectively keep track of the shipping traffic as well as other critical developments in the IOR under a collaborative framework with like-minded countries.*

Australia has posted a liaison officer at Indian Navy's Gurgaon-based Information Fusion Centre (IFC) that has emerged as a major hub of maritime security information relating to the Indian Ocean, a region witnessing increasing Chinese naval forays.

The Indian Navy established the 'Information Fusion Centre -- Indian Ocean Region (IOR) in 2018 to effectively keep track of the shipping traffic as well as other critical developments in the IOR under a collaborative framework with like-minded countries.

In a tweet, Australian high commissioner Barry O'Farrell AO described the posting of the official from his country at the IFC as an "important milestone" under the comprehensive strategic partnership between the two countries.

"Pleased to attend today's induction ceremony of LCDR Diju Kanjiraparambil at the Information Fusion Centre," he said.

The defence and security ties between India and Australia have been on an upswing in the last few years.

In June last, India and Australia elevated their ties to a comprehensive strategic partnership and signed a landmark deal for reciprocal access to military bases for logistics support during an online summit between Prime Minister Narendra Modi and his Australian counterpart Scott Morrison.

The Mutual Logistics Support Agreement (MLSA) allows militaries of the two countries to use each other's bases for repair and replenishment of supplies, besides facilitating scaling up of overall defence cooperation.

The Australian Navy was part of the Malabar naval exercise hosted by India in November last. The navies of the US and Japan were also part of it.

<https://economictimes.indiatimes.com/news/defence/australia-posts-liaison-officer-at-indian-navys-information-fusion-centre/articleshow/81123788.cms>

## America has sent five rovers to Mars—when will humans follow?

*By Issam Ahmed and Lucie Aubourg*

With its impeccable landing on Thursday, NASA's Perseverance became the fifth rover to reach Mars—so when can we finally expect the long-held goal of a crewed expedition to materialize?

NASA's current Artemis program is billed as a "Moon to Mars" mission, and acting administrator Steve Jurczyk has reiterated his aspiration of "the mid-to-end of the 2030s" for American boots on the Red Planet.

But while the trip is technologically almost within grasp, experts say it's probably still decades out because of funding uncertainties.

### **Mars is hard**

Wernher von Braun, the architect of the Apollo program, started work on a Mars mission right after the Moon landing in 1969, but the plan, like many after it, never got off the drawing board.

What makes it so hard? For a start, the sheer distance.

Astronauts bound for Mars will have to travel about 140 million miles (225 million kilometers), depending on where the two planets are relative to each other.

That means a trip that's many months long, where astronauts will face two major health risks: radiation and microgravity.

The former raises the lifetime chances of developing cancer while the latter decreases bone density and muscle mass.

If things go wrong, any problems will have to be solved on the planet itself.

### **'It's the details'**

That said, scientists have learned plenty of lessons from astronauts' missions to the Moon and to space stations.

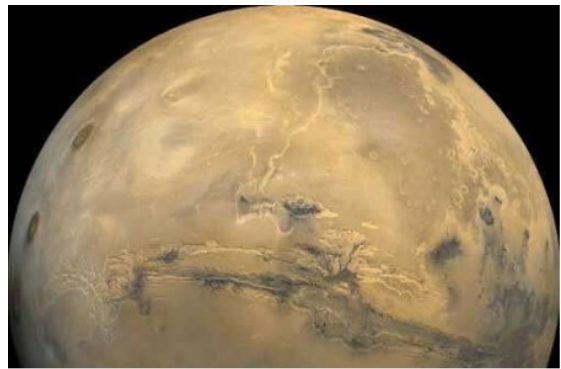
"We have demonstrated on Earth orbiting spacecraft the ability for astronauts to survive for a year and a half," said Jonathan McDowell, an astronomer for the Harvard-Smithsonian Center for Astrophysics.

The general ideas of how to execute a Mars mission are in place, but "it's the details" that are lacking, he added.

One way to reduce the radiation exposure on the journey is getting there faster, said Laura Forczyk, the founder of space consulting firm Astralytical and a planetary scientist.

This could involve using nuclear thermal propulsion which produces far more thrust than the energy produced by traditional chemical rockets.

Another could be building a spacecraft with water containers strapped to it that absorb space radiation, said McDowell.



Astronauts bound for Mars will have to travel about 140 million miles (225 million kilometers), depending on where the two planets are relative to each other



Once there, we'll need to find ways to breathe in the 95-percent carbon dioxide atmosphere. Perseverance has an instrument on board to convert carbon dioxide to oxygen, as a technical demonstration.

Other solutions involve breaking down the ice at the planet's poles into oxygen and hydrogen, which will also fuel rockets.

Radiation will also be challenging on the planet, because of its ultra thin atmosphere and lack of a protective magnetosphere, so shelters will need to be well shielded, or even underground.

### **Risk tolerance**

The feasibility also comes down to how much risk we are willing to tolerate, said G. Scott Hubbard, NASA's first Mars program director who's now at Stanford.

During the Shuttle era, said Hubbard, "the demand was that the astronauts face no more than three percent increased risk in death."

"They have now raised that—deep space missions are somewhere between 10 and 30 percent, depending on the mission, so NASA's taking a more aggressive or open posture," he added.

That could involve raising the permissible level of total radiation astronauts can be exposed to over their lifetimes, which NASA is also considering, said Forczyk.

### **Political will**

The experts agreed the biggest hurdle is getting buy-in from the US president and Congress.

"If humanity as a species, specifically the American taxpayer, decides to put large amounts of money into it, we could be there by the 2030s," said McDowell.

He doesn't think that's on the cards, but said he would be surprised if it happened later than the 2040s, a conclusion shared by Forczyk.

President Joe Biden hasn't yet outlined his Mars vision, though his spokeswoman Jen Psaki said this month the Artemis program had the administration's "support."

Still, the agency is facing budget constraints and is not expected to meet its goal of returning astronauts to the Moon by 2024, which would also push back Mars.

### **SpaceX wildcard**

Could NASA be beaten to it by SpaceX, the company founded by billionaire Elon Musk, who is targeting a first human mission in 2026?

Musk has been developing the next-generation Starship rocket for the purpose—though two prototypes blew up in spectacular fashion on their recent test runs.

These might look bad, but the risks SpaceX is able to take, and NASA as a government agency can't, gives it valuable data, argued Hubbard.

That could eventually give SpaceX an edge over NASA's chosen rocket, the troubled Space Launch System (SLS) which is beset by delays and cost overrun.

But not even one of the richest people in the world can foot the entire bill for Mars themselves.

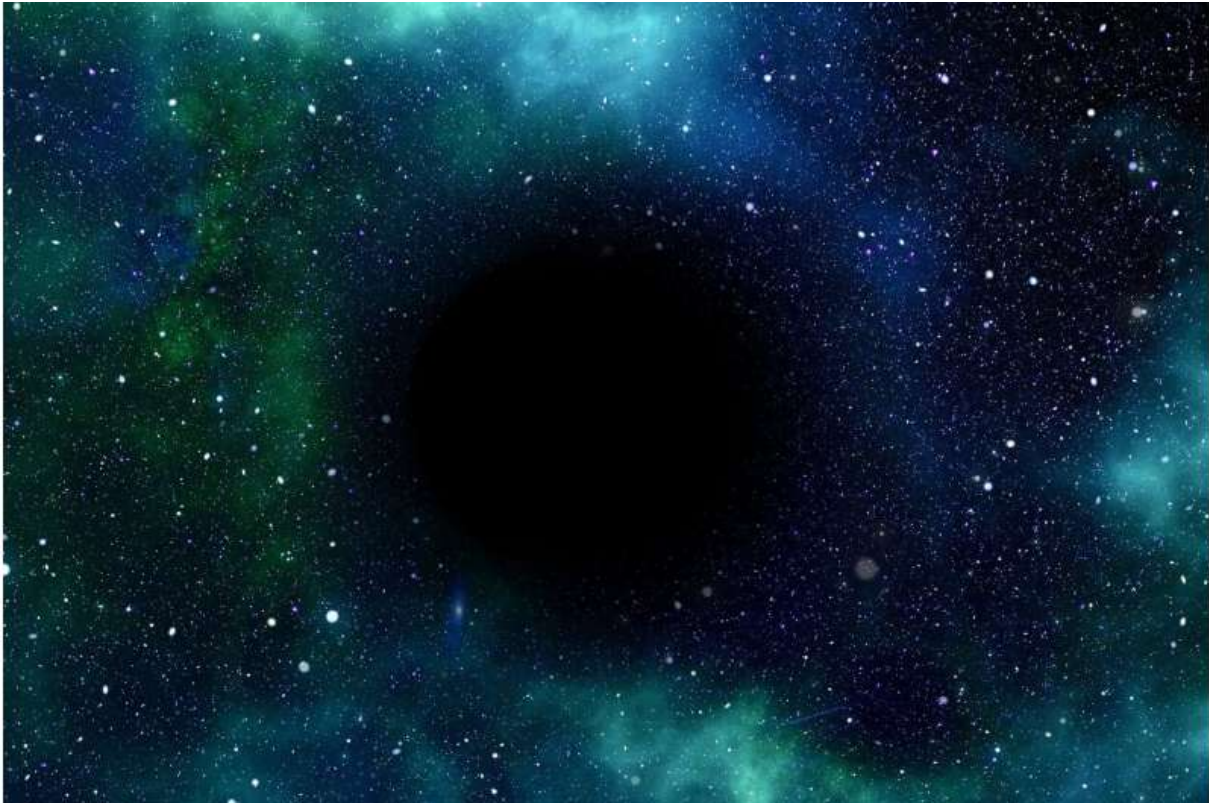
Hubbard sees a public-private partnership as more likely, with SpaceX providing the transport and NASA solving the many other problems.

<https://phys.org/news/2021-02-america-rovers-marswhen-humans.html>

# Researchers observe stationary Hawking radiation in an analog black hole

*By Ingrid Fadelli*

Black holes are regions in space where gravity is very strong—so strong that nothing that enters them can escape, including light. Theoretical predictions suggest that there is a radius surrounding black holes known as the event horizon. Once something passes the event horizon, it can no longer escape a black hole, as gravity becomes stronger as it approaches its center.



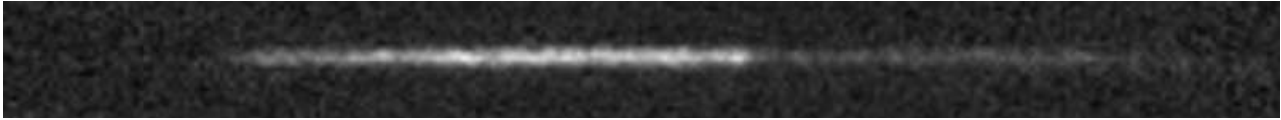
Theoretical physicist Stephen Hawking predicted that while nothing can escape from within them, black holes spontaneously emit a limited amount of light, which is known as Hawking radiation. According to his predictions, this radiation is spontaneous (i.e., it arises from nothing) and stationary (i.e., its intensity does not change much over time).

Researchers at Technion- Israel Institute of Technology have recently carried out a study aimed at testing Hawking's theoretical predictions. More specifically, they examined whether the equivalent of Hawking radiation in an "artificial black hole" created in a laboratory setting was stationary.

"If you go inside the event horizon, there's no way to get out, even for light," Jeff Steinhauer, one of the researchers who carried out the study, told Phys.org. "Hawking radiation starts just outside the event horizon, where light can barely escape. That is really weird because there's nothing there; it's empty space. Yet this radiation starts from nothing, comes out, and goes towards Earth."

The artificial black hole created by Steinhauer and his colleagues was approximately 0.1 millimeters long and was made of a gas composed of 8000 rubidium atoms, which is a relatively low number of atoms. Every time the researchers took a picture of it, the black hole was destroyed. To observe its evolution over time, they thus had to produce the black hole, take a picture of it and then create another one. This process was repeated many times, for months.





The analog black hole created by the researchers. Credit: Kolobov et al.

The Hawking radiation emitted by this analog black hole is made of sound waves, rather than light waves. The rubidium atoms flow faster than the speed of sound, so sound waves cannot reach the event horizon and escape from the black hole. Outside of the event horizon, however, the gas flows slowly, so sound waves can move freely.

"The rubidium is flowing fast, faster than the speed of sound, and that means that sound cannot go against the flow," Steinhauer explained. "Let's say you were trying to swim against the current. If this current is going faster than you can swim, then you can't move forward, you are pushed back because the flow is moving too fast and in the opposite direction, so you're stuck. That's what being stuck in a black hole and trying to reach the event horizon from inside would be like."

According to Hawking's predictions, the radiation emitted by black holes is spontaneous. In one of their previous studies, Steinhauer and his colleagues were able to confirm this prediction in their artificial black hole. In their new study, they set out to investigate whether the radiation emitted by their black hole is also stationary (i.e., if it remains constant over time).

"A black hole is supposed to radiate like a black body, which is essentially a warm object that emits a constant infrared radiation (i.e., black body radiation)," Steinhauer said. "Hawking suggested that black holes are just like regular stars, which radiate a certain type of radiation all the time, constantly. That's what we wanted to confirm in our study, and we did."

Hawking radiation is composed of pairs of photons (i.e., light particles): one emerging from a black hole and another falling back into it. When trying to identify the Hawking radiation emitted by the analog black hole they created, Steinhauer and his colleagues thus looked for similar pairs of sound waves, one coming out of the black hole and one moving into it. Once they identified these pairs of sound waves, the researchers tried to determine whether there were so-called correlations between them.

"We had to collect a lot of data to see these correlations," Steinhauer said. "We thus took 97,000 repetitions of the experiment; a total of 124 days of continuous measurement."

Overall, the findings appear to confirm that the radiation emitted by black holes is stationary, as predicted by Hawking. While these findings apply primarily to the analog black hole they created, theoretical studies could help to confirm if they can also be applied to real black holes.

"Our study also raises important questions, because we observed the entire lifetime of the analog black hole, which means that we also saw how the Hawking radiation started," Steinhauer said. "In future studies, one could try to compare our results with predictions of what would happen in a real black hole, to see if 'real' Hawking radiation starts from nothing and then builds up, as we observed."

At some point during the researchers' experiments, the radiation surrounding their analog black hole became very strong, as the black hole formed what is known as an 'inner horizon.' In addition to the event horizon, Einstein's theory of general relativity predicts the existence of an inner horizon, a radius inside black holes that delineates a further region closer to its center.

In the region inside the inner horizon the gravitational pull is far lower, thus objects are able to move around freely and are no longer pulled towards the center of the black hole. Yet they are still unable to leave the black hole, as they cannot pass through the inner horizon in the opposite direction (i.e., heading toward the event horizon).

"Essentially, the event horizon is a black hole's outer sphere, and inside it, there's a small sphere called the inner horizon," Steinhauer said. "If you fall through the inner horizon, then you're still stuck in the black hole, but at least you don't feel the weird physics of being in a black hole. You'd be in a more 'normal' environment, as the pull of gravity would be lower, so you wouldn't feel it anymore."

Some physicists have predicted that when an analog black hole forms an inner horizon, the radiation it emits becomes stronger. Interestingly, this is exactly what happened in the analog black hole created by the researchers at Technion. This study could thus inspire other physicists to investigate the effect of the formation of an inner horizon on the intensity of a black hole's Hawking radiation.

<https://phys.org/news/2021-02-stationary-hawking-analog-black-hole.html>

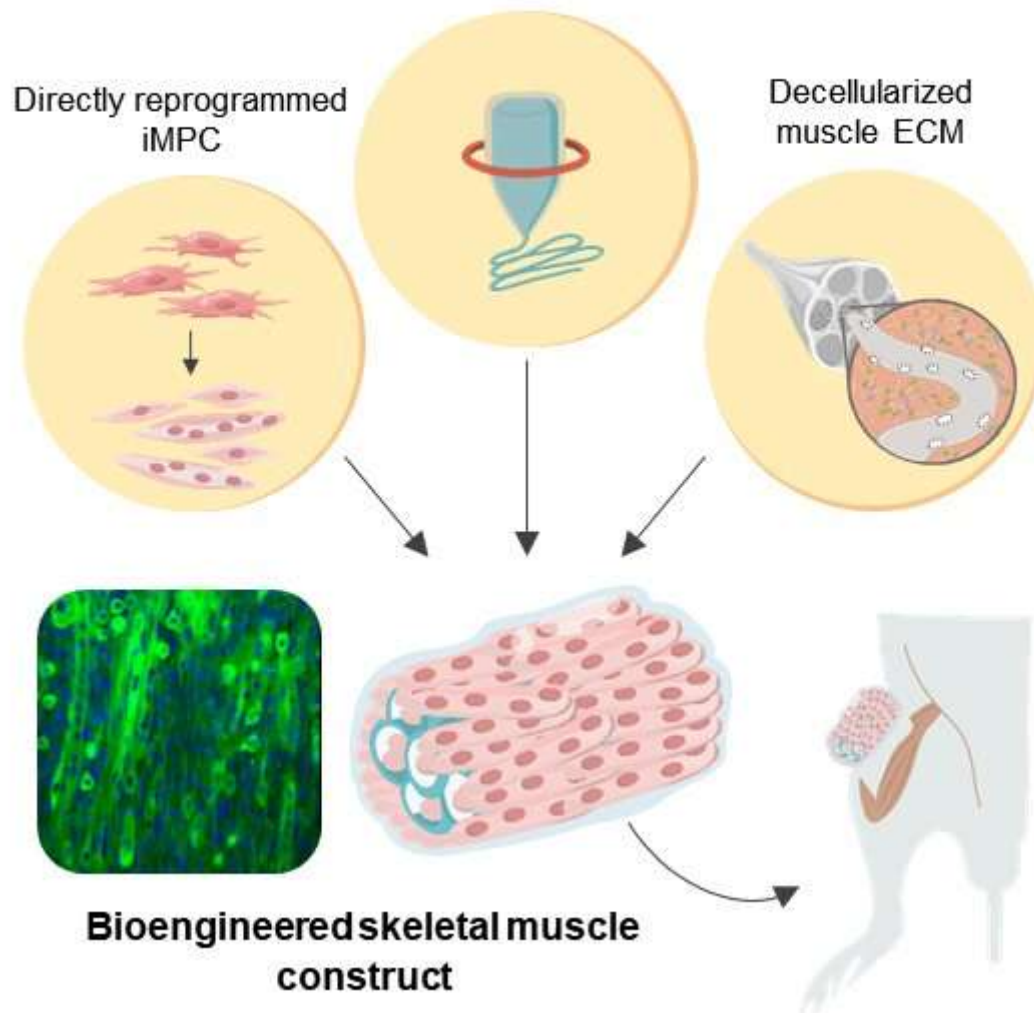


Sun, 21 Feb 2021

## Bioengineered hybrid muscle fiber for regenerative medicine

*By Institute for Basic Science*

Thermally-drawn PCL fiber



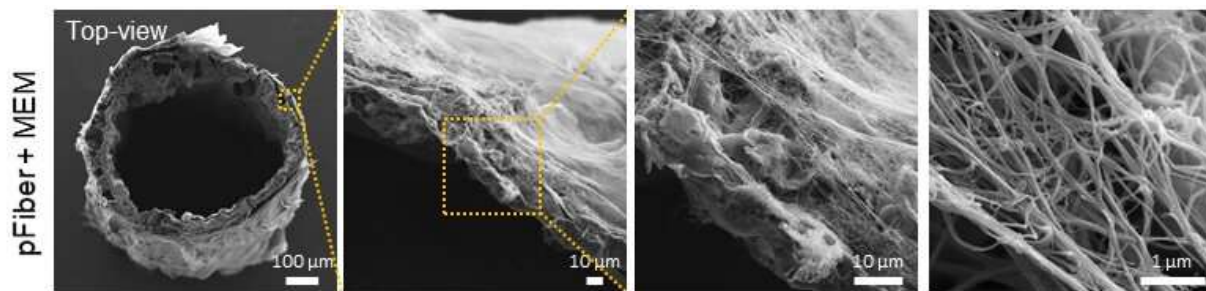
Schematic illustration of the 3D skeletal muscle-like bioengineered constructs Credit: Institute for Basic Science

Muscle constitutes the largest organ in humans, accounting for 40% of body mass, and it plays an essential role in maintaining life. Muscle tissue is notable for its unique ability for spontaneous regeneration. However, in serious injuries such as those sustained in car accidents or tumor resection which results in a volumetric muscle loss (VML), the muscle's ability to recover is greatly diminished. Currently, VML treatments comprise surgical interventions with autologous

muscle flaps or grafts accompanied by physical therapy. However, surgical procedures often lead to reduced muscular function, and in some cases result in a complete graft failure. Thus, there is a demand for additional therapeutic options to improve muscle loss recovery.

A promising strategy to improve the functional capacity of the damaged muscle is to induce de novo regeneration of skeletal muscle via the integration of transplanted cells. Diverse types of cells, including satellite cells (muscle stem cells), myoblasts, and mesenchymal stem cells, have been used to treat muscle loss. However, invasive muscle biopsies, poor cell availability, and limited long-term maintenance impede clinical translation, where millions to billions of mature cells may be needed to provide therapeutic benefits.

Another important issue is controlling the three-dimensional microenvironment at the injury site to ensure that the transplanted cells properly differentiate into muscle tissues with desirable structures. A variety of natural and synthetic biomaterials have been used to enhance the survival and maturation of transplanted cells while recruiting host cells for muscle regeneration. However, there are unsolved, long-lasting dilemmas in tissue scaffold development. Natural scaffolds exhibit high cell recognition and cell binding affinity, but often fail to provide mechanical robustness in large lesions or load-bearing tissues that require long-term mechanical support. In contrast, synthetic scaffolds provide a precisely engineered alternative with tunable mechanical and physical properties, as well as tailored structures and biochemical compositions, but are often hampered by lack of cell recruitment and poor integration with host tissue.



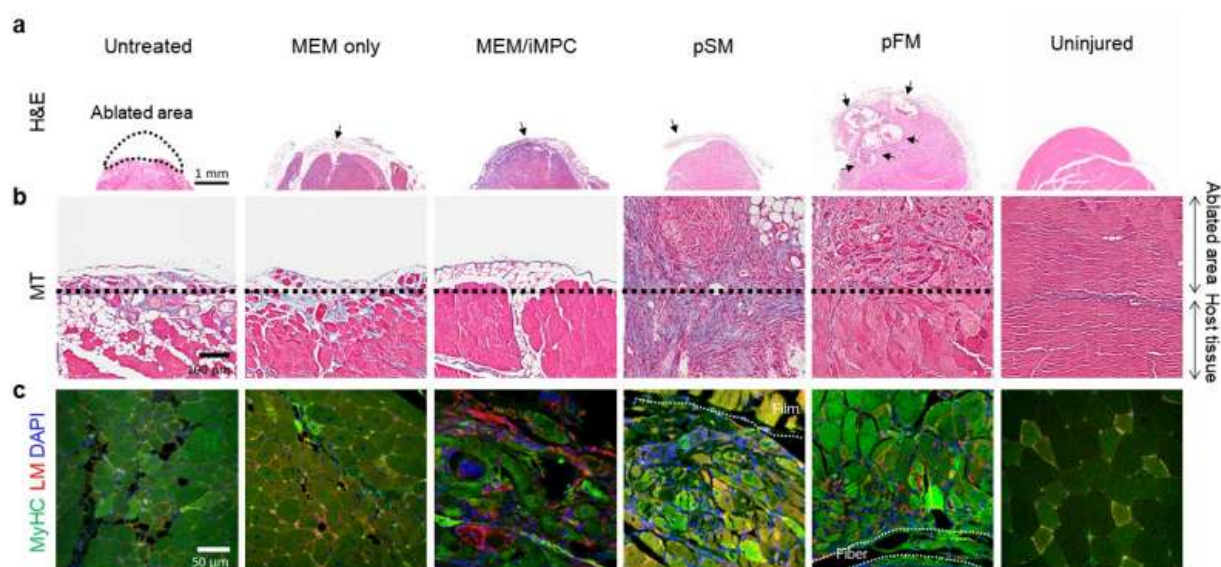
SEM image of the porous PCL scaffold with MEM Credit: Institute for Basic Science

To overcome these challenges, a research team at the Center for Nanomedicine within the Institute for Basic Science (IBS) in Seoul, South Korea, Yonsei University, and the Massachusetts Institute of Technology (MIT) devised a novel protocol for artificial muscle regeneration. The team achieved effective treatment of VML in a mouse model by employing direct cell reprogramming technology in combination with a natural-synthetic hybrid scaffold.

Direct cell reprogramming, also called direct conversion, is an efficient strategy that provides effective cell therapy because it allows the rapid generation of patient-specific target cells using autologous cells from the tissue biopsy. Fibroblasts are the cells that are commonly found within the connective tissues, and they are extensively involved in wound healing. As the fibroblasts are not terminally differentiated cells, it is possible to turn them into induced myogenic progenitor cells (iMPCs) using several different transcription factors. Herein, this strategy was applied to provide iMPC for muscle tissue engineering.

In order to provide structural support for the proliferating muscle cells, polycaprolactone (PCL), was chosen as a material for the fabrication of a porous scaffold due to its high biocompatibility. While salt-leaching is a widely used method to create porous materials, it is mostly limited to producing closed porous structures. To overcome this limitation, the researchers augmented the conventional salt leaching method with thermal drawing to produce customized PCL fiber scaffolds. This technique facilitated high-throughput fabrication of porous fibers with controlled stiffness, porosity, and dimensions that enable precise tailoring of the scaffolds to the injury sites.

Recovery of the ablated muscle tissue a) 1 week and b-c) 4 weeks after transplantation Credit: Institute for Basic Science



Recovery of the ablated muscle tissue a) 1 week and b-c) 4 weeks after transplantation Credit: Institute for Basic Science

However, the synthetic PCL fiber scaffolds alone do not provide optimal biochemical and local mechanical cues that mimic muscle-specific microenvironment. Hence the construction of a hybrid scaffold was completed through the incorporation of decellularized muscle extracellular matrix (MEM) hydrogel into the PCL structure. Currently, MEM is one of the most widely used natural biomaterials for the treatment of VML in clinical practice. Thus, the researchers believe that hybrid scaffolds engineered with MEM have a huge potential in clinical applications.

The resultant bioengineered muscle fiber constructs showed mechanical stiffness similar to that of muscle tissues and exhibited enhanced muscle differentiation and elongated muscle alignment in vitro. Furthermore, implantation of bioengineered muscle constructs in the VML mouse model not only promoted muscle regeneration with increased innervation and angiogenesis but also facilitated the functional recovery of damaged muscles. The research team notes: "The hybrid muscle construct might have guided the responses of exogenously added reprogrammed muscle cells and infiltrating host cell populations to enhance functional muscle regeneration by orchestrating differentiation, paracrine effect, and constructive tissue remodeling."

Prof. Cho Seung-Woo from the IBS Center for Nanomedicine and Yonsei University College of Life Science and Biotechnology who led this study notes, "Further studies are required to elucidate the mechanisms of muscle regeneration by our hybrid constructs and to empower the clinical translation of cell-instructive delivery platforms."



## healthline

Sun, 21 Feb 2021

### People with mental health conditions are at high risk for COVID-19, so why aren't they being prioritized

By Shawn Radcliffe

- *People with severe mental illness are at higher risk for COVID-19 but are unlikely to be prioritized to receive the coronavirus vaccine.*
- *People diagnosed with attention-deficit/hyperactivity disorder, bipolar disorder, major depressive disorder, or schizophrenia are much more likely to contract the new coronavirus than people without severe mental illness.*
- *Experts say these groups should be given priority for a COVID-19 vaccine.*

People with severe mental illnesses such as schizophrenia and major depressive disorder have a higher risk of contracting the new coronavirus and dying from COVID-19.

Yet in most countries, this at-risk population is not prioritized to receive the COVID-19 vaccine.

“Society needs to prioritize at-risk groups, but it is dispiriting to see that even during the pandemic, mental health is an afterthought — if that — for many countries,” Hilka Kärkkäinen, president of the Global Alliance of Mental Illness Advocacy Networks-Europe (GAMIAN-Europe), said in a news release.

“The scientific evidence is clear that COVID, and the resulting lockdown, is causing significant harm to people with severe mental health problems, but very few countries are addressing this. This needs to change.”

In a new study, Kärkkäinen and her colleagues looked at 20 European countries to see how they prioritized at-risk groups for COVID-19 vaccination.

They found that only Denmark, Germany, the Netherlands, and the United Kingdom recognized severe mental illness as a high-risk medical condition that allows people to be vaccinated earlier.

Their results were published Feb. 17 in the journal *Lancet Psychiatry* Trusted Source.

It’s a grim statistic that is mirrored by the United States.

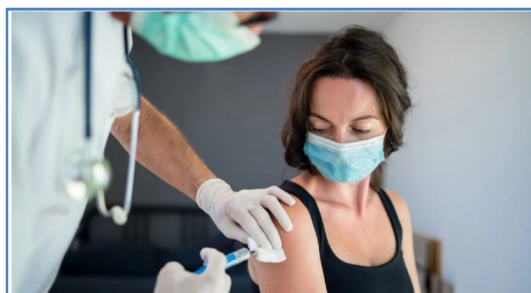
Only a few states, such as New Jersey and Ohio, include people with severe mental illness in the early phases of the COVID-19 vaccination rollout. And these were limited to inpatients at psychiatric hospitals.

#### Severe mental illness increases COVID-19 risks

While many physical medical conditions Trusted Source — such as kidney and heart conditions, obesity, and type 2 diabetes — increase the risk of severe COVID-19, people with severe mental illness are also at higher risk.

Recent research shows that people diagnosed with attention-deficit/hyperactivity disorder, bipolar disorder, major depressive disorder, or schizophrenia are much more likely to contract the new coronavirus than people without severe mental illness.

Researchers think this may be because people with severe mental illness are more likely to work in unsafe environments, live in overcrowded group settings, or are homeless — all factors that increase their chance of acquiring the virus.



Severe mental illness also increases the risk of dying from COVID-19.

One study<sup>Trusted Source</sup> in JAMA Network Open found that people with a severe mental illness were one-and-a-half times more likely to die from COVID-19, even after researchers considered other factors such as age and physical medical conditions.

A more recent study in JAMA Psychiatry<sup>Trusted Source</sup> found that people in New York City with schizophrenia were almost three times more likely to die from COVID-19 than people without schizophrenia. This was after researchers considered other risk factors.

The study's authors wrote that people with schizophrenia might have differences in their immune systems that predispose them to severe COVID-19.

Or the medications used to treat schizophrenia could worsen COVID-19.

Additional research would be needed to determine whether these factors played a role in patients' outcomes.

### ***Prioritize people with severe mental illness***

People with severe mental illnesses such as schizophrenia and major depressive disorder have a higher risk of contracting the new coronavirus and dying from COVID-19.

Dr. Benjamin Druss, a professor and Rosalynn Carter Chair in Mental Health at Rollins School of Public Health at Emory University in Georgia, says the New York City study suggests that severe mental illness may increase a person's risk beyond those other factors.

"People with severe mental illness are definitely at high risk [for COVID-19] due to comorbidities," he said, "and they may be at even higher risk over and above those comorbidities, as suggested by that article."

But there are other reasons to prioritize this group for the COVID-19 vaccine.

"People with severe mental illness are also at risk for not getting the vaccine even when they are eligible," said Druss. He says this is due to "a variety of reasons," such as higher rates of homelessness and not having regular sources of primary medical care.

He thinks designating this group as a high-risk population should go hand-in-hand with allocating vaccine doses to facilities where people with severe mental illness receive services or healthcare, such as group homes, homeless shelters, community mental health centers, and psychiatric hospitals.

Having a one-dose vaccine approved could help reach this population, since people who receive care or services at these places may not return for a second dose.

"Now, with the Johnson & Johnson vaccine on the horizon, which only requires a single dose, it makes even more sense to expand the range of places that are offering the vaccines to include various kinds of public mental health facilities," he said.

Though most states do not prioritize people with severe mental illness for the COVID-19 vaccine, people may fall into another priority category based on their age or other medical conditions.

<https://www.healthline.com/health-news/people-with-mental-health-conditions-are-at-high-risk-for-covid-19-so-why-arent-they-being-prioritized>



