

# Indian astronaut Shubhanshu Shukla to grow crops, study water bears at space station next month

NEW DELHI, Apr 21 (PTI)

INDIAN astronaut Shubhanshu Shukla is expected to conduct at least seven experiments, including growing crops and studying "ultimate survivors" water bears in space, during his 14-day stay at the International Space Station next month. The Indian Space Research Organisation (ISRO), in collaboration with NASA and the European Space Agency (ESA), will conduct seven experiments during the Axiom Mission-4 (Ax-4) scheduled for late May that will also have astronauts from the US, Hungary and Poland onboard.

In partnership with NASA and Voyager, ISRO is studying the resilience of tardigrades or water bears, tiny creatures known for their ability to survive extreme conditions. Tardigrades have been on Earth for around 600 million years and will likely withstand any major changes to the Earth's climate in the near future as well.

This experiment will examine the revival, survival and reproduction of tardigrades on the International Space Station, comparing gene expression patterns between space-flown and ground control populations.

Understanding the molecular mechanisms of their resilience

could inform future space exploration and lead to innovative biotechnology applications on Earth, Axiom Space said.

The Ax-4 experiment focuses on how astronauts interact with electronic displays in microgravity and aims to understand the physical and cognitive impacts of using computer screens in space.



This research will delve into how tasks like pointing, gaze fixation, and rapid eye movements are affected in microgravity and how these changes might influence stress levels. The findings could inform the design and interaction of future spacecraft computers, making them more user-friendly for astronauts.

ISRO, in collaboration with NASA and Redwire, will undertake the 'Space Microalgae' project to investigate the impact of microgravity

on the growth, metabolism and genetic activity of three strains of edible microalgae.

These tiny organisms could become a sustainable food source for long-duration space missions, thanks to their rich protein, lipid, and bioactive components. Another project, in partnership with ESA, examines cyanobacteria, aquatic bacteria capable of photosynthesis. By comparing two strains of cyanobacteria, ISRO aims to understand their growth rates, cellular responses, and biochemical activity in microgravity.

This research could pave the way for integrating these bacteria into spacecraft environmental control systems, enhancing life support for future missions.

The "Effect of Metabolic Supplement on Muscle Regeneration Under Microgravity" project, conducted by ISRO with NASA and BioServe Space Technologies, seeks to uncover the pathways responsible for muscle dysfunction in space.

By identifying molecular mechanisms and potential interventions, this research could help prevent muscle atrophy in astronauts during long missions. The findings might also have significant implications for treating muscle-related diseases on Earth.

# Iran serious in talks with US, seeks no delay: Deputy FM

TEHRAN, Apr 21 (IANS)

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IRAN'S Deputy Foreign Minister Kazem Gharibabadi said the country is serious in its indirect negotiations with the US and wants no delay in the diplomatic process.

Gharibabadi made the remarks at a meeting with the members of the Parliament's National Security and Foreign Policy Committee in Tehran on Sunday, the official news agency IRNA quoted the committee's spokesperson, Ebrahim Rezaei, as saying. Gharibabadi said that Tehran and Washington, during their second round of indirect talks in the Italian capital Rome on Saturday, discussed and agreed on "the overall framework, agenda, and (subsequent) technical talks."

According to Rezaei, the Deputy Foreign Minister has stressed that "all sanctions (on Iran) should be lifted in a way that benefits the Iranian people economically," while emphasising that Tehran would not negotiate on its right to enrich uranium, which he said is "among the red lines."

The Rome talks and the previous round of Iran-US dialogue that took place in the Omani capital Muscat on April 12 have centred on Tehran's nuclear programme and the removal of Washington's sanctions, Xinhua news agency reported.

The talks, hailed by both sides as "constructive," followed US President Donald Trump's threats to bomb Iran if the Middle Eastern country does not accept his offer for talks outlined in a letter sent to Iran's leadership in early March.

# China, Indonesia to boost maritime co-operation in South China Sea

TAIPEI (Taiwan), Apr 21 (AP)

INDONESIA and China said on Monday they committed to maritime co-operation promoting safety and security in the South China Sea, amid longstanding Indonesian suspicions about China's actions in waters controlled by Jakarta.

The sides agreed to cooperate in infrastructure building, minerals development and joint security, the last being the most significant because of Indonesia's concerns over Chinese development near the Natuna island group in the South China Sea, which Beijing claims virtually in



its entirety. While neither side mentioned the islands directly, Chinese Foreign Minister Wang Yi said the officials agreed to fur-

Indonesian Defence Minister Sjafrie Sjamsoeddin, centre left, and Chinese Defence Minister Dong Jun, centre right, shake hands as Chinese Foreign Minister Wang Yi, centre, and Indonesian Foreign Minister Sugiono, right, look on after a press briefing about the first meeting of China-Indonesia joint foreign and defence ministerial dialogue at the Diaoyutai State Guest House in Beijing on Monday. (AP/PTI)

ther enhance their security co-operation in a comprehensive and sustainable way.

"We will enhance law enforcement and security co-operation to jointly combat transnational (inaudible) co-operation," Wang said following the first joint meeting of foreign and defence ministers from the two sides in Beijing. "We agreed that safeguarding peace and stability in the South China Sea is in line with the interests of all parties, and we will set up an example in maritime co-operation," Wang said, adding that coast guards signed a memorandum of understanding on maritime security.

# 8 Naxals including 1 with bounty of Rs 1 cr killed in Jharkhand encounter



RANCHI/NEW DELHI, Apr 21 (PTI)

**EIGHT** Naxals, including a top rung central committee member of the extremists carrying a bounty of Rs 1 crore on his head, were killed in an encounter with CoBRA commandos of the CRPF and police in Bokaro district of Jharkhand on Monday, officials said.

The exchange of fire started around 5.30 am in Lugu Hills of Lalpania area of the district, they said. The troops of 209 Commando Battalion for Resolute Action (CoBRA) along with State police conducted the operation in which eight Naxals were killed and an AK series rifle, three INSAS rifles, a self-loading  
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# PM, Vance lay roadmap for trade talks, welcome progress

## Terms Of Ref Finalised For Negotiations

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**New Delhi:** PM Modi and US Vice President J D Vance welcomed "significant progress" in the ongoing negotiations for a mutually beneficial bilateral trade agreement (BTA) focused on "welfare of the people of the two countries", as the PM

► **EDIT: Hillbilly Ji**

hosted Vance, Second Lady Usha and their children who are on a four-day visit to India.

The US said they formally announced the finalisation of terms of reference for the talks, laying down a roadmap for further discussions about shared economic priorities.

Both sides backed an early



US vice-president J D Vance, his wife Usha, and their children Ewan, Vivek and Mirabel with PM Modi at his residence on Monday

conclusion of the agreement, which will allow India to stave off the threat from the Trump administration's reciprocal tariffs, as Vance underscored the US pursuit of a fair and balanced trade relationship with India.

"The BTA presents an opportunity to negotiate a new

and modern trade agreement focused on promoting job creation and citizen well-being in both countries, with the goal of enhancing bilateral trade and supply-chain integration in a balanced and mutually beneficial manner.

Guided by their respective visions of 'Amrit Kaal for

India' and 'Golden Age for America', BTA is expected to create new opportunities of growth for workers, farmers and entrepreneurs in both countries," an American readout of the meeting said.

There was also talk about the Quad summit India will host later this year and Modi said he was looking forward to hosting US President Trump for the meeting. However, while the US readout recalled the "positive and successful" meeting between Modi and Trump in Feb, it was silent on whether Trump would visit India.

Vance and family, accompanied by senior US officials, landed in Delhi Monday morning and were received by Union minister Ashwini Vaishnaw. The delegation left for Jaipur after the dinner meeting with Modi, which was described by the Vance delegation as pleasant and productive.

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# Hope to sign 1st phase of US trade pact by Oct: FM

**San Francisco:** Finance minister Nirmala Sitharaman said India is "actively engaging" with the new US administration and hopes to conclude the first tranche of the bilateral trade agreement "positively" by fall (Sept-Oct) this year.

"We are one of the countries, which is actively engaged with the new administration of the United States of America to see how best we can get a bilateral trade agreement done," she said during an interaction with the Indian diaspora here. Earlier this year, US President Donald Trump and Prime Minister Narendra Modi agreed to launch talks for a bilateral trade deal, amid the lurking fear of reciprocal tariff being imposed by Washington.

"Equally, the priority that we gave to engage with the govt here is more than obviously seen with the Prime Minister himself visiting the United States in Feb. You had the commerce and trade minister come. I have come here because I also have the IMF and World Bank meeting. I am scheduled to meet the treasury secretary, my counterpart here. So, the keenness with which we are enga-

ging with the US administration, even as I talk, I think the US vice-president is in India. He will be engaging with the Prime Minister hopefully this evening or tomorrow," she said.

The US and India have aimed for a bilateral trade agreement (BTA), which is a kind of free trade pact.

The two have decided to conclude the proposed BTA in two tranches or phases.

"So, the long and short of engaging with the US is not just reciprocal tariff-related matter but in the interest of keeping an agreement in mind and in the interest of one of the largest trading partners with whom we need to have agreement, we are working in order that by the fall this year we should have first phase of agreement signed."

The US President announced reciprocal tariffs (or import duties) on a number of countries, including India and China, on April 2. However, on April 9, he announced a 90-day suspension of these tariffs until July 9 this year, except for those on China and Hong Kong, as about 75 countries approached America for trade deals. China is facing up to 245% duty on its goods entering the US. AGENCIES

