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NEWS ALERT

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GLOBAL

[Miniaturized Lab-on-a-Chip for Real-time Chemical Analysis of Liquids](#)

A new type of sensor has been developed at TU Wien based on customized infrared technology, and significantly more sensitive than previous standard devices. Moreover, it can be used for a wide range of molecule concentrations and it can operate directly in the liquid and provide data in real time, i.e. within fractions of a second. The fingertip-sized sensor chip needs only a few microliters of liquid for a measurement, and delivers data in real time -- many times per second. The device uses quantum cascade lasers and detectors. The infrared radiation emitted by such a laser penetrates the liquid on the micrometres-length scale and is then measured by the detector on the same chip. Using these specially combined ultra-compact lasers and detectors, the sensing device was built and its performance was tested in first proof-of-concept measurements. The technology is extremely flexible. It is possible to adjust the necessary wavelengths as needed in order to study different molecules. It is also possible to add further quantum cascade sensors on the same chip to measure different wavelengths and thus distinguish the concentration of different molecules simultaneously. This opens up a new field in analytical chemistry: Real-time mid-infrared spectroscopy of liquids. The possible applications are extremely diverse.

[Flexible Ultra-thin Endoscope Thinner than a Needle](#)

A research team from the Institute for Basic Science (IBS), South Korea, has developed a high-resolution holographic endoscope system. The researchers first illuminated an object by focusing light onto a single core of a fiber bundle and measured holographic images that were reflected from the object at a certain distance from the optical fiber. From the holographic images, it was possible to reconstruct the object image with a microscopic resolution by using a unique coherent image optimization algorithm. The developed endoscope which has a probe of size 350 μm , was able to obtain high-resolution images with a spatial resolution of 850 nm, which is far smaller than the core size of the optical fiber bundle. The researchers tested the system to image the villi structure of mice and acquired high contrast images, and were able to reconstruct multi-depth 3D images from a single data set with a depth resolution of 14 μm . The new endoscope could greatly improve imaging of the internal structures of our body in a minimally invasive manner, including directly observing cavities as small as micro vessels and the smallest airways in the lungs, which was impossible with pre-existing technologies. It could be useful for industrial inspections of semiconductors and microprocessors.

[Memory Prosthesis Could Help in Brain Disorders](#)

Researchers from in North Carolina, tested two versions of a memory prosthesis (which involves inserting an electrode deep into the brain) in 24 people who had implanted electrodes

to study their epilepsy, some of whom also had brain injuries. The first version, called a memory decoding model (MDM), mimics patterns of electrical activity across the hippocampus that occur naturally when each volunteer successfully forms memories. The second type, called multi-input, multi-output (or MIMO), more closely mimics how the hippocampus works. In tests, the memory prosthesis improved the volunteers' performances on memory tests ranging from 11% to 54%. The MIMO model, which more closely mirrors how the hippocampus works, had even better results, on average. And the biggest improvements were seen in people who had the worst memory performance at the start of the experiment. The memory prosthesis could one day be widely used to restore memory in people with memory disorders. The electrodes used in the study are around a millimeter wide, and all the volunteers had them implanted deep enough into the brain to reach the hippocampus—around 10 centimeters deep. Future memory prosthesis designed to treat memory disorders will require brain electrodes with hundreds of contact points, allowing them to record from, and stimulate, hundreds or thousands of neurons.

Airy Beams Could Enhance Ultrasound

Researchers at Washington University in St. Louis invented a technique for generating ultrasound waves that can self-bend, like a rainbow. Airy beams are a class of acoustic waves that move on a curved, arch-like trajectory and can auto-focus around obstacles that are directly in the beams' path, which makes them well suited for ultrasound applications in biomedical imaging, therapy, non-destructive testing and particle manipulation. However, generating Airy beams in water requires large, expensive equipment, which has limited their broad applications in ultrasound. They designed and 3D-printed a flexible and versatile tool known as Airy beam-enabled binary acoustic meta surfaces (AB-BAMs) for ultrasound beam manipulation. They then demonstrated the capability of AB-BAM in water.

Self-sterilizing Plastic Kills Viruses including COVID

Scientists at Queen's University Belfast have developed a virus-killing plastic which makes it harder for bugs, including Covid, to spread in hospitals and care homes. The plastic film is cheap and could be fashioned into protective gear such as aprons. It works by reacting with light to release chemicals that break the virus. It could kill viruses by the million, even in tough species which linger on clothes and surfaces. The team of chemists and virologists investigated self-sterilising materials that reduced the risk of contaminated surfaces spreading infections. They used thin sheets of plastic that contained nanoparticles of titanium dioxide. These react with ultraviolet light to release molecules called reactive oxygen species. The film could replace disposable plastic films used in the healthcare industry and has the added value of being self-sterilising at no real extra cost. The material was tested in the laboratory against four types of virus - two influenza viruses, the Covid virus and a picornavirus, which has the traits that make a virus highly stable outside the body.

AI Model to Detect Parkinson's Disease Developed

MIT researchers have developed an early-research artificial intelligence model that has demonstrated success in detecting Parkinson's disease from breathing patterns. The model relies on data collected by a device that detects breathing patterns in a contactless manner using radio waves. The model also estimated the severity and progression of Parkinson's, in accordance with the Movement Disorder Society Unified Parkinson's Disease Rating Scale (MDS-UPDRS), which is the standard rating scale used clinically. The researchers trained the model

by using nocturnal breathing data (data collected while subjects were asleep) from various hospitals in the US and some public datasets. After training the model, they tested it on a dataset that was not used in training, and discovered it diagnosed Parkinson's disease with an accuracy of about 90 per cent when it analyses one night's sleep worth of data from a patient. They found that the model's accuracy improves to 95 per cent when it analyses sleep data from 12 nights. While MIT's model is promising, it is still in an early stage of development.

Synthetic Human Microbiome Built

A team of researchers from Stanford University has constructed the first synthetic microbiome model, built entirely from scratch and encompassing more than 100 different bacterial species. The research team selected 104 bacterial species prevalent in human gut, after growing each bacterial species individually, and then mixing them all together, the researchers introduced the mix (called hCom1) to germ-free mice, to harbour no natural microbiome. The next step was filling the bacterial gaps that the original microbial composition was likely lacking. To do this the researchers challenged hCom1 mice with a human faecal sample. Based on a theory called colonization resistance, the researchers hypothesized any unfilled bacterial niches in hCom1 would be filled by these new invaders. Researchers envision a future where patients receive transplants of engineered communities of bacteria.

COVID-19

COVID-19 (WORLD)

Fungal Infections Increase Mortality among Hospitalized COVID-19 Patients

An international group of scientists analysed SARS-CoV-2/fungus co-infections during the pandemic and presented warnings relevant to the present and to future pandemics. They noted that fungal infections increase mortality among hospitalized COVID-19 patients and there is an urgent need for novel antifungal medications. Several novel classes of antifungals have been developed and are currently in phase 2 and 3 clinical trials. However, the researchers fear these novel drugs will not reach all those who need them. Cutting-edge treatments could remain confined to the rich countries, as the inequality of their availability is likely to continue. There is need for more tools to control fungal infections and more scientists to study the different fungi and their action mechanisms.

New Antiviral Therapy May Block COVID-19 Transmission

In their study, researchers at Gladstone Institutes showed that the new treatment, called a therapeutic interfering particle (TIP), decreases the amount of virus shed from infected animals and limits transmission of the virus. They previously developed a novel approach for treating infectious diseases: a single-dose, intranasal treatment that protects against severe SARS-CoV-2 infection. This study shows that a single, intranasal dose of TIPs reduces the amount of virus transmitted, and protects animals that came into contact with that treated animal. Single-dose antiviral reduces not only symptoms and severity of COVID-19, but also shedding of the virus. TIPs reside inside the same cells as the virus they target, and they evolve at the same time, staying active even as new viral strains emerge. The researchers treated hamsters infected with SARS-CoV-2 with the antiviral TIPs and then measured, daily, the amount of virus in the animals' noses. Compared to hamsters that hadn't received the TIPs (called control animals),

treated animals had less virus in their nasal passages at every time point. By day 5, all control animals were still shedding high levels of virus, while the virus was undetectable in four out of five TIP-treated animals.

New COVID Subvariant BA.4.6 Spreading

BA.4.6, a subvariant of the Omicron COVID variant which has been quickly gaining traction in the US, is now confirmed to be spreading in the UK and makes up around 9 percent of sequenced cases. BA.4.6 is a descendant of the BA.4 variant of Omicron detected in January 2022 in South Africa and has since spread around the world alongside the BA.5 variant. BA.4.6 has a mutation to the spike protein, called R346T, which is associated with immune evasion. However, there are no reports yet that this variant is causing more severe symptoms but COVID vaccines might be less effective against BA.4.6. The emergence of BA.4.6 and other new variants shows the virus is present, and is mutating. Close monitoring of new variants including BA.4.6 is needed, as they could lead to the next wave of COVID pandemic. For the public, it will pay to stay cautious, and comply with any public health measures in place to prevent the spread of what remains a very contagious virus.

COVID-19 (INDIA)

First COVID-19 Nasal Vaccine Gets Emergency Use Authorization

Department of Biotechnology (DBT) and Biotechnology Industry Research Assistance Council (BIRAC) announced the DCGI approval for emergency use authorization of first of its kind intranasal COVID-19 Vaccine to Bharat Biotech (BBIL). This is the fourth success story for the Covid-19 vaccine under mission Covid Suraksha. BBV154 is an intranasal replication-deficient chimpanzee adenovirus SARS-CoV-2 vectored vaccine. It consists of a replication deficient ChAd vector expressing the stabilized Spike SARS-CoV-2 (Wuhan variant). DBT's Autonomous Institute, National Institute of Immunology (NII), New Delhi utilized their "Human Immune Monitoring and T-cell Immunoassay Platform" to examine the vaccine-induced SARS-CoV-2-specific systemic and mucosal cellular immune responses the trial participants. Interactive Research School for Health Affairs (IRSHA), Pune completed the Plaque Reduction Neutralization Assay (PRNT) to quantify the titer of neutralizing antibodies for the virus from three trial sites.

IISc Develops Covid Doppelganger

The Indian Institute of Science (IISc) has developed and tested a novel virus-like particle (VLP) – a non-infectious nanoscale molecule that resembles and behaves like the virus but does not contain its native genetic material. Such VLPs have several uses and can also potentially be developed into a vaccine candidate that can trigger an immune response in our bodies. They can also be used to reduce the time taken to screen drugs that can fight the virus. When the team injected a high dose of VLPs into mice in the lab, it did not affect the liver, lung, or kidney tissues. To test its immune response, they gave one primary shot and two booster shots to mice models with a gap of 15 days, after which they found a large number of antibodies generated in the blood serum of the mice. These antibodies were also capable of neutralising the live virus.

Gene Link to COVID-19 Susceptibility and Severity Found

Scientists at the Indian Institute of Science Education and Research (IISER) in Mohali, Punjab, showed through a meta-analysis of globally published data that correlations exist between

mutations in specific genes of patients and susceptibility and severity of COVID-19. The study found that while mutations in certain genes (ACE1, APOE, CCR5 and IFITM3) showed increased risk for infection, variants in others (ACE2, AGTR1 and TNFA) showed association with severe COVID. After identifying 84 studies that investigated the association of 130 polymorphisms in 61 genes, the team performed a meta-analysis of all the eligible studies. Seven genetic variants involving 15,550 cases and 4,44,007 controls were explored. Similarly, the data of 11 variants involving 6,702 patients with severe COVID-19 and 8,640 infected individuals with non-severe manifestations were studied for statistically significant association.

INDIA–SCIENCE & TECHNOLOGY

Cost-Effective Vaccine for Prevention of Cervical Cancer

Union Minister of State for Science & Technology, Dr Jitendra Singh announced India's first indigenously developed vaccine, "CERVAVAC" for the prevention of cervical cancer. He pointed out that cervical cancer ranks as the second most prevalent cancer in India and accounts for nearly one-fourth of the world's cervical cancer deaths despite being largely preventable. The most promising intervention for preventing cervical cancer is vaccination against human papillomavirus (HPV). It is estimated that HPV types 16 and 18 (HPV-16 and HPV-18) together contribute to approximately 70 percent of all invasive cervical cancer cases worldwide. 'CERVAVAC' is an outcome of a partnership of DBT and BIRAC with the Bill and Melinda Gates Foundation, supported by Serum Institute of India Private Limited for the indigenous development of quadrivalent vaccines through its partnership programme 'Grand Challenges India'.

Potential Marker for Early Detection of Neuro-degenerative Disease

Scientists at the S.N Bose National Centre for Basic Sciences have explored how the hydration of proteins gets altered as 'liquid liquid phase separation' (LLPS) sets in. This process plays a crucial role in inducing human diseases, especially age-related neuro-degenerative diseases like Alzheimer's disease, Parkinson's disease and cataract. The researchers have spotted the crucial role of water in liquid liquid phase separation which holds the key to neuro-degenerative diseases. They found that some excipients or inactive substances that serve as the vehicle or medium for a drug or other active substance like sucrose can stabilize LLPS while some can inhibit it. Thus the aggregation process of these diseases could be modulated by altering water network dynamics using these excipients.

India's First-ever Night Sky Sanctuary to Set-up in Ladakh

The Department of Science & Technology (DST), Govt of India, has undertaken to set up India's first-ever 'Night Sky Sanctuary' in Ladakh, India. The proposed Dark Sky Reserve will be located at Hanle in Ladakh as a part of Changthang Wildlife Sanctuary. It will boost Astro tourism in India and will be one of the world's highest-located sites for optical, infra-red, and gamma-ray telescopes. The Union Minister, Dr Jitendra Singh informed that a tripartite MoU was signed recently among the UT administration, Ladakh Autonomous Hill Development Council (LAHDC) Leh and the Indian Institute of Astrophysics (IIA) for launching the Dark Space Reserve. He said that all the stakeholders will jointly work towards the preservation of the night sky from unwanted light pollution and illumination, which is a serious threat to scientific observations and natural sky conditions.

Women in Engineering, Science, and Technology (WEST)

Women in Engineering, Science, and Technology (WEST), a new initiative to cater to women with a STEM background and empower them to contribute to the science, technology, and innovation ecosystem. WEST platform will be under I-STEM, a national web portal for sharing research equipment/facilities and is the umbrella under which many programmes for promoting collaborations in R&D and technological innovation among and between academia and industry, especially startups, are underway. Women may join the WEST program and explore opportunities to become stakeholders in various domains and pursue careers in R&D at various levels: technicians, technologists, scientists, and entrepreneurs.

Gene to Prevent Candidiasis Identified

A team of researchers from Bengaluru-based Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) in collaboration with Christophe d'Enfert's group at Institut Pasteur, Paris, France, carried out a large-scale screening to identify regulators of chromosome stability in the fungus which is also a clinically relevant fungal model system. They have identified a gene that probably holds the key to preventing the fungal infection Candidiasis that often affects intensive-care unit (ICU) patients, cancer patients and patients receiving immunosuppressive therapy. Named CSA6, the gene has been identified in *Candida albicans*, a fungus notorious for causing high morbidity and mortality rates under certain immunocompromised conditions such as AIDS or during cancer treatment.

Quick Reaction Surface to Air Missile System Tested

Defence Research and Development Organisation (DRDO) and Indian Army have successfully completed six flight-tests of the Quick Reaction Surface to Air Missile (QRSAM) system off the Odisha coast. The flight tests were conducted as part of evaluation trials by the Indian Army. The flight-tests were carried out against high-speed aerial targets mimicking various types of threats to evaluate the capability of the weapon systems under different scenarios, including long range medium altitude, short range, high altitude manoeuvring target, low radar signature with receding & crossing target and salvo launch with two missiles fired in quick succession. The system performance was also evaluated under day and night operation scenarios. During these tests, all the mission objectives were met establishing pin-point accuracy of the weapon system with state-of-the-art guidance and control algorithms including warhead chain. These tests were conducted in the final deployment configuration consisting of all indigenously-developed subsystems, including the missile with indigenous Radio Frequency (RF) seeker, mobile launcher, fully automated command and control system, surveillance and multi-function Radars. The uniqueness of the QRSAM weapon system is that it can operate on the move with search and track capability & fire on short halt. This has been proven during the mobility trials conducted earlier.

New Vaccine Candidate Against Tuberculosis Developed

Researchers at the Indian Institute of Science (IISc), Bengaluru have developed a new vaccine candidate against Tuberculosis (TB). They have used spherical vesicles secreted by bacteria coated on gold nanoparticles which can then be delivered to immune cells. The new vaccine can trigger an immune response and offer protection against the disease. The subunit vaccine candidate contains only parts of the infectious bacterium to stimulate an immune response. The team used Outer Membrane Vesicles (OMVs), which are spherical membrane-bound particles

released by some bacteria, and contain an assortment of proteins and lipids which could induce an immune response against the pathogen. Researchers forced the OMVs and the gold nanoparticles together to synthesize OMV-AuNPs through a 100 nm filter. They then treated immune cells that were cultured in the lab with OMVs derived from *Mycobacterium smegmatis*, a related bacterial species that does not cause disease in humans. The team now plans to develop gold-coated OMVs derived directly from *Mycobacterium tuberculosis* and test them on animal models to take the results forward for clinical applications.

PM Modi Calls for Concerted Efforts in Science and Technology

PM Modi, at the inaugural session of the Centre-State Science Conclave, urged State Governments to frame modern policies related to science, innovation and technology to find solutions to local problems. He called for concerted efforts to make India a global centre of research and innovation and urged State Governments to frame modern policies in the fields of science and technology. He stressed the need to take research to the local level, and on innovation to find solutions to local problems. In order to encourage innovation, the State Governments should give emphasis on the creation of more and more scientific institutions and on simplification of processes. The number of innovation labs should also be increased in the institutions of higher education in the states, he said.

IN BRIEF

New, More Energy-efficient Devices Using Gallium Nitride

Researchers from North Carolina State University have created new high-power electronic devices that are more energy efficient than previous technologies. The devices are made possible by a unique ion implantation technique for doping gallium nitride (GaN) in a controlled way. They introduced impurities into specific regions on GaN materials to selectively modify the electrical properties of the GaN only in those regions. They demonstrated how this technique can be used to create Junction Barrier Schottky (JBS) diodes that are used as switches in every power system. The GaN JBS diode has record high breakdown voltage (915 V) and record low on-resistance. The team is trying to scale up production.

Perovskite Cell with Greater Stability, Efficiency

Researchers in the U.S. Department of Energy's (DOE's) National Renewable Energy Laboratory (NREL) made a technological breakthrough and constructed a perovskite solar cell with the dual benefits of being both highly efficient and highly stable. The device had a certified stabilized efficiency of 24% under 1-sun illumination, making it the highest reported of its kind. The highly efficient cell also retained 87% of its original efficiency after 2,400 hours of operation at 55 degrees Celsius. The researchers used an inverted perovskite architecture known for its high stability and integration into tandem solar cells. The team also added a new molecule, 3-(Aminomethyl) pyridine (3-APy), to the surface of the perovskite which formed an electric field on the surface of the perovskite layer, that improved the efficiency of the inverted cell from less than 23% to greater than 25%. Reactive surface engineering stands could significantly enhance the performance of inverted cells.

Carbon Capture Conversion for Ethylene Production

A team of researchers from the University of Illinois Chicago has discovered a way to convert 100 percent of carbon dioxide captured from industrial exhaust into ethylene, a key building block for plastic products. The process can convert up to 6 metric tons of carbon dioxide into 1 metric ton of ethylene, recycling almost all carbon dioxide captured. Because the system runs on electricity, the use of renewable energy can make the process carbon negative. In UIC's approach, an electric current is passed through a cell, half of which is filled with captured carbon dioxide, the other half with a water-based solution. An electrified catalyst draws charged hydrogen atoms from the water molecules into the other half of the unit separated by a membrane, where they combine with charged carbon atoms from the carbon dioxide molecules to form ethylene. In addition to ethylene, the UIC team was able to produce other carbon-rich products useful to industry with their electrolysis approach.

RESOURCES & EVENTS

G20 Research Forum Launched During T20 Summit

The Economic Research Institute for ASEAN and East Asia (ERIA), Research and Information System for Developing Countries (RIS), and the Institute for Economic and Social Research – Faculty of Economics and Business, University of Indonesia (LPEM FEB UI) jointly launched the G20 Research Forum at the T20 Summit in Bali, Indonesia on 5 September 2022. The G20 Research Forum (GRF) has been set up with open membership for other international organisations, think tanks, and research organisations. The GRF has been set up to provide well-researched inputs to the G20 process and its ministerial tracks, on developmental issues before the members and non-members of G20. The T20 will be an important component of its research and policy inputs. GRF aims to undertake studies, organise brainstorming sessions, collaborate with governments and chairs of G20; and establish linkages with multilateral organisations such as WTO, World Bank, ILO, EIB, etc. for monitoring of policy outcomes of G20 statements and resolutions. The GRF will especially support the developmental agenda in the G20 meetings in the years ahead.

IAEA Calls for Establishment of Nuclear Safety and Security Protection Zone

IAEA Director General told the UN Security Council that establishment of a Nuclear Safety and Security Protection Zone at the Zaporizhzhya Nuclear Power Plant (NPP) in Ukraine is urgently needed to ensure that the physical integrity of the plant is not compromised. IAEA has established a continuous presence at Zaporizhzhya NPP, with personnel on the ground at the plant providing first-hand neutral, impartial and technical information on the site's status. The IAEA has urged the adoption of seven essential measures for ensuring nuclear safety and security at Zaporizhzhya NPP, including secure off-site power supply from the grid, to maintain cooling of the reactors and the spent fuel. See detailed report at https://www.iaea.org/sites/default/files/22/09/ukraine-2ndsummaryreport_sept2022.pdf

[Update] A back-up 330 KV power line was restored on 10 September, providing the plant with the external electricity it needs for essential safety functions. This has enabled shut down of the last operating reactor No. 6 early 11 September. Bringing unit 6 to a cold shutdown state, can take about 30 hours. Even with all the reactors in shutdown, power is still required for reactor cooling and other systems needed to maintain safety. IAEA is urging establishing a nuclear safety and security protection zone at the plant.

Foxconn Concludes \$19.4 bn Deal to Make Chips in India

Taiwanese electronics giant Foxconn will invest \$19.4 billion to make semiconductors in India with local conglomerate Vedanta, backed by India's push to boost tech self-reliance in semiconductor chips. India approved a \$10 billion incentive plan last December to boost its domestic industry by covering up to half of all project costs. The Foxconn deal is the scheme's most ambitious investment to date and will see a manufacturing facility built in the state of Gujarat. Vedanta will take a 60 percent share in the joint venture for its venture into chip-making. Foxconn will take the minority stake. The facilities will be operational by 2024 and will also manufacture display screens for phones and tablets, the promoters said. Singapore's IGSS Ventures announced \$3.2 billion in July to make chips in Tamil Nadu state. Next Orbit of the UAE and Israel's Tower Semiconductor have agreed to set up a \$2.9 billion plant in Karnataka state.

SCIENCE POLICY AND DIPLOMACY

Sharing Marine Genetic Resources Remains a Difficult Problem

Recent United Nations negotiations in New York City, failed to reach agreement on how to share profits from commercializing the high seas' genetic resources. Genetic material from high seas organisms and the digital data from sequencing their genomes could be used to develop new products. Sharing these resources, which theoretically belong to the entire world, is an important issue and there is no binding agreement on sharing marine genetic resources discovered either in international waters or the seabed. Scientists in advanced countries are now looking to the unexplored genomes of high-seas organisms for new leads for the marine biotechnology industry, which is projected to be worth \$6.4 billion by 2025. Negotiators looked for some guidance for a high seas agreement from the Nagoya Protocol, which is part of the U.N. Convention on Biological Diversity, which allows the commercialization of biodiversity by nations or companies while mandating that these resources' rightful owners—such as Indigenous peoples—be compensated. Historically, U.N. members such as the U.K., the European Union, the U.S. and Japan, which have the technology, money and ability to scour the deep sea for new products, have argued for the right to patent and solely profit from marine genetic resources. Developing nations, including a group of African countries, have argued that profits, data and other benefits derived from marine genetic resources should be shared among all nations. During the negotiations, developed countries agreed in principle for the first time to share monetary benefits from the commercialization of marine genetic resources. But negotiators could not agree on money-sharing systems that would not hamper research. Complicating matters is the fact that genetic resources include not just physical specimens but gene sequence data uploaded to repositories such as GenBank. These data can then be downloaded and synthesized into compounds in a lab that can be used to develop a new product. Increasingly, this digital sequence information, or DSI, is all a company needs to create and mass-produce a product. Use of DSI has huge advantages: the approach requires no harvesting of ocean animals, plants or microorganisms, and its commercial potential is virtually limitless because a gene sequence can be sold online multiple times. DSI is currently unregulated, even within the Nagoya Protocol, which only addresses physical samples. U.N. member states are wary of including DSI in any monetary sharing plan for the high seas because it is virtually impossible to trace the origin of such information once it has been synthesized into a compound

that is incorporated into a product. Tracking gets especially complex when a product is designed using genes from different organisms. Although the Nagoya Protocol doesn't include DSI, four nations—Brazil, India, Malawi and South Africa—do officially regulate it.

Talks Proceed on Managing Chemicals and Waste

The fourth session of the Intersessional Process for Considering the Strategic Approach to International Chemicals Management (SAICM) and the Sound Management of Chemicals and Waste Beyond 2020 (IP4) was held in Bucharest, Romania, from 29 August to 2 September 2022. It advanced work on the outline for a future global policy framework to promote chemical safety and produced a “Co-Chairs’ Single Consolidated Text,” which covers, among other aspects, the vision, scope, principles, and strategic objectives of a future framework. ICCM5, where recommendations for a post-2020 platform or instrument for the sound management of chemicals and waste will be considered, is scheduled to meet in Bonn, Germany, from 25-29 September 2023. Chemicals production is one of the major sectors of the global economy, and its heavy reliance on water and energy and chemicals’ potential adverse impacts on the environment and human health make sound management of chemicals a key cross-cutting issue for sustainable development.

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