News from here and there

Synthetic collagen nanomaterial developed with capability to shapeshift

A new synthetic collagen nanomaterial with the capacity to change its shape has been developed. This has potential ramifications for medical science.

The *Journal of the American Chemical Society* published in November 2020 (Merg *et al*. Shape-shifting peptide nanomaterials: Surface asymmetry enables pH-dependent formation and interconversion of collagen tubes and sheets. *J Am Chem Soc* 2020;**142:**19956–68. DOI: *https://doi.org/10.1021/jacs.0c08174*) the findings of research done at Emory University, Atlanta, Georgia, USA about the discovery of a new shape-shifting nanomaterial that can autoregulate its structure from flat sheets to tubes and back to sheets. This study has wide ranging implications for biomedical device application development.

The nanomaterial was developed from synthetic collagen, which itself is modelled on naturally occurring human protein collagen. (Collagen, as readers know, is the most abundant protein in the human body and forms the bulk of the solid connective tissue. Its triple helix structure was discovered by Ramachandran and Kartha. See, *Natl Med J India* 2006;**19:**348–52, *https://archive.nmji.in/archives/Volume_19_6_Nov_Dec_2006/classics/Class1.htm.*) Being 10 000 times thinner than the width of a human hair, this biocompatible synthetically engineered protein can adjust its architectural pattern from tubes to sheets in a controlled sequence by curling and unfurling itself. These shape alterations are induced by adjustments made to the acid concentration of the material's inherent environment. The materials so developed can be used to create new controlled-release drug delivery systems and act as substrates for new techniques of tissue engineering, as per researchers involved in the project.

The research saw collaboration between Emory University USA (Andrea D. Merg, Gavin Touponse, Alisina Bazrafshan, Hew Ming Helen Siaw, R. Brian Dyer, Khalid Salaita, Vincent P. Conticello), Argonne National Laboratory (Xiaobing Zuo), Paul Scherrer Institute in Villigen, Switzerland (Eric van Genderen, Thorsten B. Blum, Jan Pieter Abrahams) and Robert P. Apkarian, Integrated Electron Microscopy (Arthur McCanna). The National Science Foundation, the Swiss National Science Foundation and the National Institutes of Health provided funds for the research. A provisional patent for the nanomaterial has been registered by the Emory Office of Technology Transfer.

Dr Conticello, lead researcher, whose laboratory has been working with the development of synthetic collagen for over a decade, attributed the discovery of this new nanomaterial to serendipity.

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Vaccine drive against Covid-19 starts in India

India began its Covid-19 vaccination campaign from Saturday, 16 January 2021, with approximately 30 million healthcare and frontline workers receiving priority. In the previous week, 18 222 new coronavirus cases were reported on 8 January 2021, taking the total tally of positive cases to 10.43 million (the highest number of infections in the world, after the USA). India's drug regulator has approved two coronavirus vaccines for emergency use; Covishield—developed by AstraZeneca and Oxford University, locally manufactured by the Serum Institute of India, and Covaxin—produced by the Indian company Bharat Biotech International Limited. India is the world's biggest vaccine producer.

More than 100 000 vaccinators were trained and several mock exercises conducted; an all-India national exercise was also conducted. A nationwide trial was conducted on volunteers for coronavirus disease vaccine delivery systems, in various temporary vaccination centres to avoid any manual or technical issues.

Prime Minister Narendra Modi virtually launched the first phase of the pan-India Covid-19 vaccination drive on 16 January at 10:30 a.m. More than 300 000 received their jab on the first day. The first vaccine was administered to a sanitation worker at the All India Institute of Medical Sciences, New Delhi. Social media sites were flooded with jab selfies.

India became the fastest country to vaccinate 6 million beneficiaries nationwide in just 24 days. In the initial phase of the Covid-19 vaccination programme, India aims at vaccinating 300 million people by August 2021, including 30 million health workers and frontline workers (e.g. police, soldiers), and 270 million elderly people (those aged over 50 years) and people with comorbid conditions. After the healthcare and frontline workers, the vaccines will be given to people aged 50 years and above and to those under 50 years with comorbid conditions constituting around 2.7 million people.

The world's largest vaccination campaign commenced across the country at 3006 session sites virtually connected during the exercise. Around 100 beneficiaries were vaccinated at each of the session sites. A dedicated 24×7 call centre—with the phone number 1075—has also been established for addressing queries related to the pandemic, vaccine rollout and the Co-WIN software. India's digital vaccine management system, Co-WIN, provides real-time information of vaccine stocks, storage temperature and monitoring of beneficiaries.

India, with its vast indigenous vaccine sector, will play a critical role in providing affordable Covid-19 vaccines to needy countries. India has a long experience of large and targeted vaccination campaigns under the country's Universal Immunization Programme since 1985.

The initial safety concerns and myths and rumours about Covid-19 vaccination were debunked. Social and electronic media and positive journalism played a big role in motivating the public for the vaccine.

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New Essential Diagnostics List 2021 released by the WHO

On 29 January 2021, the WHO published the 3rd edition of its *Model List of Essential In Vitro Diagnostics (EDL)* (*www.who.int/publications/i/item/9789240019102, www.who.int/publications/m/item/the-who-edl-brochure*), which includes WHO-endorsed Covid-19 nucleic acid and antigen detection tests. The edition also enlarges the array of tests for vaccine-avertable non-communicable diseases (such as diabetes and cancer) and infectious diseases. Other important additions are a section on endocrinology, which is critical for reproductive and women's health, and a 'Do Not Do' recommendations list. The first EDL was published in 2018. Also unveiled during the event was a new, instructive website dedicated to diagnostics and a beta electronic version of the EDL.

In the brochure published on the WHO website, the WHO Director-General, Dr Tedros Adhanom Ghebreyesus states that 'An accurate diagnosis is the first step to getting effective treatment. No one should suffer or die because of a lack of diagnostic services, or because the right tests were not available.' The essential list will promote healthier lives, keep populations safe, and help the vulnerable.

Dr Mariângela Simão, the WHO Assistant-Director General for Access to Medicines and Health Products, hoped that the use of appropriate tests would support evidence-based treatments and the responsible use of medications, and improve resource allocation and health outcomes.

The Strategic Advisory Group of Experts on In Vitro Diagnostics (SAGE IVD) advisory group updated the EDL. This group consists of global specialists in the field of *in vitro* diagnostics, their appraisal, application and regulation. The specialists evaluated each test for its efficacy, impact, and precision and then decided on the recommendation. The current EDL contains 175 test categories along with 2 'Do Not Do' recommendations. The list includes product classes but does not endorse any brand.

In the 'Do Not Do' recommendations section, countries are advised against the purchase and use of certain diagnostic tests. These tests are western blot and line immunoassays for HIV testing and commercial serodiagnostic antibody tests for tuberculosis.

Like the previous two editions, the tests in the present EDL are classified into tests for use in community and healthcare settings that do not have laboratory facilities, and second, tests for use in healthcare facilities that have clinical laboratories.

Till date, the WHO has partnered with India, Bangladesh, Pakistan and Nigeria in development of their national EDLs. Globally, India was the first country to adapt the WHO EDL and create its own national EDL.

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The National Medical Journal of India invites contributions to the '**News from here and there**' section. We are particularly interested in getting newswriters from the north and northeast regions of India as well as from other countries.
By news, we refer to anything that might have happened in your region which will impact on the practice of medicine or will be of interest to physicians in India. The emphasis of the news items in this column, which are usually of 200–450 words, is on factual reporting. Comments and personal opinions should be kept to a minimum, if at all. Interested correspondents should contact SANJAY A. PAI at *sanjayapai@gmail.com* or *nmji@nmji.in*