Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Coronavirus risk to embryos  A bioengineering technique to boost production of specific proteins might be the basis of a vaccine against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that causes COVID-19. It is based on using snippets of a pathogen’s structure to produce an antigen that triggers an appropriate immune response. Scientists manipulated a natural cellular process to ramp up levels of two proteins used by SARS-CoV-2 to infect other cells, packaged the protein-boosting instructions in nanoparticles, and injected them into mice. Within a month, the mice had developed antibodies against the SARS-CoV-2 virus. The researchers changed mRNA sequences to promote higher-than-usual levels of proteins.

Hope for a global vaccine  SARS-CoV-2 appears to have a low level of genetic variation, meaning that a promising vaccine candidate could be equally effective against all currently circulating strains. Genetic analysis of sequences from individuals infected with SARS-CoV-2 has revealed that the virus has mutated minimally since December 2019. To characterise SARS-CoV-2 diversification since the beginning of the pandemic, researchers aligned 18 514 independent virus genome sequences sampled from individuals in 84 countries and scanned them for variations. Analyses revealed low estimates of genetic differentiation following the initial outbreak, and indicate that, so far, the SARS-CoV-2 genome has evolved through a mostly random process rather than through adaptation to the human hosts it encounters.

A gift from cats  GC376, a drug used to cure a deadly disease caused by a coronavirus in cats is being prepared for clinical trials in humans against COVID-19. The drug is a protease inhibitor that interferes with the virus’s ability to replicate, thus ending an infection. Proteases are key to many body functions and are common targets for drugs to treat everything from high blood pressure to cancer and HIV. Results so far have shown the drug is effective at inhibiting SARS-CoV-2 replication in cells and there is hope that it will work in humans as an effective antiviral treatment. The protease inhibitor was studied after the 2003 outbreak of severe acute respiratory syndrome and was further developed by veterinary researchers to treat cats.

T cells for HIV therapy  A new immunotherapy holds promise for targeting HIV. A major hurdle to an HIV cure is the viral reservoir, copies of HIV hidden away in the genome of infected cells. If antiretroviral treatment is stopped, the virus is able to rapidly make new copies of itself, ultimately leading to AIDS. Chimeric antigen receptor (CAR) T cells are a powerful immunotherapy, currently used in cancer treatment, in which a patient’s own immune T cells are engineered to express CARs. These CARs re-programme the T cells to recognise and eliminate specific diseased or infected cells. Researchers have developed a new dual CAR T cell immunotherapy that has shown success in mice.

Zika virus worsens dengue  A study confirms earlier suspicions that some antibodies to Zika virus, which usually serve to protect the body from infection, may actually interact with dengue viruses in ways that can make dengue infection worse. This interaction, known as antibody-dependent enhancement, could make it harder for researchers to design a safe and effective vaccine that protects against Zika without also increasing the risk of severe dengue.

Zika virus infection makes people more vulnerable to developing dengue disease later on, and to suffering from more severe symptoms when they get dengue. The study, which drew on data from two cohorts of Nicaraguan children who lived through a Zika epidemic in 2016 and a dengue epidemic in 2019, was the first to investigate the impacts of Zika immunity on dengue disease in humans.

Antibiotics and saliva microbes  The frequent use of antimicrobial (AM) drugs to treat common infections can shift the bacterial profiles in saliva. Researchers tried to find the associations of lifelong AM use with saliva microbiota diversity and composition in preadolescents. On average, the children had 7.4 AM purchases during their lifespan until an average age of 12 years and the four most commonly used were amoxicillin, azithromycin, amoxicillin-clavulanate, and phenoxymethylpenicillin. The contribution of lifelong AM use on saliva microbiota is unknown and AM use might have unforeseen health impacts in the future.

At the heart of Chagas disease  People living with Chagas disease without symptoms or signs of cardiac injury are at high risk of developing cardiomyopathy, a progressive heart disease, and the risk is more than doubled among patients with acute infections. Researchers conducted a systematic review and meta-analysis of cardiomyopathy development and found that asymptomatic people living with Chagas disease or individuals with acute infection are at significantly increased risk to develop cardiomyopathy at annual rates of 2% and 5% respectively.

Sharmila Devi