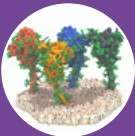


EMBL's contribution to fighting COVID-19

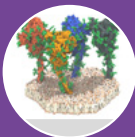


EMBL [responded swiftly to the COVID-19 pandemic](#) by launching new initiatives and repurposing existing infrastructures, including our structural biology and bioinformatics services. We have continued to provide many [services](#) in virtual and remote formats to support research efforts during the pandemic, often working in collaboration with institutes in our member states. Our facilities in particular helped to drive global understanding of the virus, and we supported research into mRNA vaccine development.

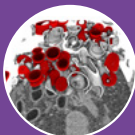
UNDERSTANDING THE VIRUS



We used cryo-electron microscopy to show what the [viral spike protein](#) looks like and how it moves.



We studied [how the virus behaves in the gut](#), using sequencing and imaging technologies.



Using our state-of-the-art imaging facility, we showed in 3D [how the virus multiplies inside cells](#).



Our analysis of the spread of the [B.1.1.7 variant](#) was used to [inform European governments and public health officials](#).

THE VALUE OF OPEN DATA

Enabling scientists and clinicians to rapidly share biological data was vital for developing drugs and vaccines. EMBL [set up the European COVID-19 Data Platform](#) to make this possible.



>500,000 data records held in the COVID-19 Data Platform.



>3.6 million web requests to the [COVID-19 Data Portal](#).



114,000 [users](#) of the COVID-19 Data Portal in 175 countries.

WHO WE ARE



The European Molecular Biology Laboratory (EMBL) is [Europe's leading life sciences organisation](#). We conduct world-class life sciences research, provide training for students and scientists, and provide state-of-the-art research infrastructures for a wide range of scientific and experimental services.



EMBL is an intergovernmental organisation with [27 member states](#), one associate member, and two prospect members. EMBL seeks to better understand life in its natural context, from molecules to ecosystems.

STATE-OF-THE-ART TECHNOLOGY

EMBL made its structural biology facilities available to help scientists around the world better understand SARS-CoV-2.



500 COVID-19-related protein crystals were analysed on one of the joint [EMBL-ESRF beamline](#).



Seven projects used our [SAXS beamline](#), including work to understand how antibodies bind to the virus.



>1,000 datasets on the [SARS-CoV-2 main protease](#) – a major drug target – were collected at our beamlines as part of a large collaboration.



Two projects made use of our [protein-to-structure pipeline](#) that can be operated entirely remotely.

EMBL's contribution to fighting COVID-19

TOWARDS TREATMENT



>20 drugs entered clinical trials due to the identification of antiviral activity.



One synthetic mini-antibody (sybody) was identified, which might stop viral infection of human cells.



Several potential drug targets were identified by studying how SARS-CoV-2 affects cells, and by comparing it with other coronaviruses.

ENABLING VACCINE DEVELOPMENT

EMBL research spanning nearly five decades has underpinned the development of COVID-19 vaccines.

BioNTech used one of EMBL Hamburg's beamlines to analyse the nanoparticles needed to deliver mRNA into human cells.

Work on viral spike proteins at EMBL in the 1970s played a crucial role in the development of Novavax's protein-based vaccine candidate.

Based on work they started at EMBL, a group of alumni developed the adenovirus technology behind COVID-19 vaccines like the one developed by AstraZeneca.



TESTING AND SEQUENCING

By developing technologies and making facilities available, EMBL supports SARS-CoV-2 detection and sequencing efforts.



>5,000 samples can be processed in parallel using the saliva-based SARS-CoV-2 detection test developed at EMBL.



Our microscopy-based assay to detect antibodies against SARS-CoV-2 in human blood was applied in a study commissioned by the German state of Baden-Württemberg. It informed decisions on reopening kindergartens and elementary schools.



€31.5 million has been allocated by the German state of Baden-Württemberg (German press release) to routinely sequence virus samples. EMBL is one of the participating institutes.

TRAINING AND COURSES



EMBL transitioned many physical courses and conferences to virtual events, and has reached diverse audiences as a result.



Our EMBL International PhD programme, Internal Training, and European Learning Laboratory for the Life Sciences have moved their recruitment, training, and career development activities to virtual formats.

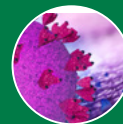


EMBL quickly organised new events to explore the impact of the pandemic on society, including on women in science, and on the future of infection biology.

RELATED LINKS



[EMBL's response to COVID-19](#)



[Youtube playlist 'EMBL Coronavirus Actions'](#)



[EMBL's research themes](#)



[EMBL's scientific services](#)