

been working absolutely flat out for 14 months. Everyone is drained and exhausted. It makes me feel that has been unappreciated," he says.

The reductions to the UK aid budget, also known as official development assistance (ODA), have hit more than 800 other research projects, affecting thousands of UK and overseas researchers. Since 2014, the government has channelled a portion of ODA funding to public science agencies to help researchers address pressing problems in the developing world, such as emerging infectious diseases, by building collaborations with researchers overseas. But in November, in response to the economic fallout of the COVID-19 pandemic, politicians slashed provisions for the ODA from 0.7% of gross national income to 0.5%.

The cut left UK Research and Innovation (UKRI) – the agency that oversees the main ODA research schemes, and the nation's central research funder – with a shortfall. As a result, it has been unable to meet its existing commitments to universities that had already secured multi-year grants. More than 12,000 people have signed a petition to reverse the cut, which reduced ODA funding for 2021–22 to £125 million (US\$174 million), £120 million less than they were expecting.

Emergency funds

In mid-March, UKRI began writing to universities that would be affected by the ODA cut to tell them about the shortfall. The letters ask institutions to reprofile, reduce or terminate the grants that had been won. Many are now scrambling to work out how to do this. The University of Oxford has 18 awards affected, and administrators have applied the cut equally across grants, "with very significant impact on research and researchers, here and with our overseas partners", according to a spokesperson for the institution.

At University College London (UCL), where 36 projects are affected and the cuts total £6.6 million, administrators have created an emergency global-health research fund worth up to £2 million to help alleviate some of the pressure on its scientists. David Price, the institution's head of research, says that the cuts are unprecedented.

Nick Greene, a developmental neurobiologist at UCL, has had a grant for a global-health trial cut by 25%. The grant is jointly funded by several organizations hit by the aid cuts. The trial, which was about to start in northern China in collaboration with Peking University, is designed to look at whether inositol supplements can prevent some neural tube defects during pregnancy. It is the precursor to a larger clinical trial, and the culmination of 20 years' work, he says.

The trial might not now go ahead. If it does, it's likely that the number of participants will be cut. "There is the stress of not knowing what the next step is," Greene says.

POPULAR GENOME SITE HITS ONE MILLION CORONAVIRUS SEQUENCES

The GISAID repository now hosts SARS-CoV-2 sequences from most nations on Earth.

By Amy Maxmen

More than 1.2 million coronavirus genome sequences from 172 countries and territories have now been shared on a popular online data platform – a testament to the hard work of researchers around the world.

Sequence data have been crucial to scientists studying the origins of SARS-CoV-2, the epidemiology of COVID-19 outbreaks and the movement of viral variants across the planet.

"Because countries are submitting data from so many parts of the world, you have a system where we can watch how the virus spreads through the world," says Sebastian Maurer-Stroh, a Singapore-based scientific adviser at GISAID – the Global Initiative on Sharing Avian Influenza Data.

Several databases for genome sequences exist, but GISAID is by far the most popular for SARS-CoV-2. It was conceived in 2006 as a repository of genomic data from influenza viruses. At the time, many countries withheld genomic information. One fear was that the countries generating the data would not get credit, or would not reap the benefits of research stemming from their original sequencing work. But after two years of negotiations between governments and scientists about data-sharing agreements, GISAID launched.

When COVID-19 began spreading in China, Maurer-Stroh says, the GISAID team immediately reached out to researchers and politicians around the world, to understand what barriers might prevent them from sharing

genomic data on SARS-CoV-2.

Although outreach helped, Maurer-Stroh says, the site's popularity is mainly due to its mechanism of sharing and the quality of its tools for sequence display and analysis.

Some wealthy countries have uploaded huge numbers of sequences and account for the lion's share in their regions (see 'Collaboration in the time of COVID'). For example, as of 20 April, the United States had shared 303,359 sequences, and the United Kingdom's tally stood at 379,510 sequences.

But glaring gaps exist. Not a single SARS-CoV-2 sequence has been uploaded from Tanzania, and countries with significant outbreaks, including El Salvador (67,851 cases, but only 6 sequences uploaded) and Lebanon (513,006 cases, 49 sequences), are lagging far behind.

To search or download sequences from GISAID, or use genomic-analysis tools, people must register and agree to terms that include not publishing studies based on the data without acknowledging scientists who uploaded the sequences and contacting them about collaboration. Such gatekeeping has upset some scientists, who argue that there should be no barriers standing in the way of access.

But GISAID probably would not have hit the one-million mark without such an approach, because it would have lacked assurances against exploitation, speculates Tulio de Oliveira, the director of the KwaZulu-Natal Research Innovation and Sequencing Platform in Durban, South Africa. He says: "This is the first time I've seen people sharing so much data before publication."

COLLABORATION IN THE TIME OF COVID

More than one million SARS-CoV-2 genome sequences have been shared on the GISAID database since January 2020, from every region of the world.

