

COVID-19 AND PANDEMIC PREPAREDNESS

Accelerating research,
advocating for equity,
and preparing for future
pandemics

The COVID-19 pandemic threw longstanding global health inequalities into stark relief. Wealthy countries had access to advanced vaccines and therapeutics as soon as they were approved while many low- and middle-income countries were left grasping for basic supplies. As COVID-19 shifts away from being the grave threat to lives and livelihoods it was only a year ago, it is more important than ever to prepare for future viral pandemics by strengthening global health R&D systems and ensuring that the principles of access, affordability, and equity are embedded in the R&D process itself.

The push for progress

Since the start of the COVID-19 pandemic, we have leveraged our experience in public-interest R&D and our alliances with research partners, notably in Africa and Latin America, to contribute to the COVID-19 response and prepare for future pandemics.

DNDi teams have worked to:

- **Coordinate clinical trials** by leveraging our assets, expertise, and network of partners to design and conduct urgently needed clinical research;
- **Facilitate and accelerate research** through a coalition of partners to ensure that COVID-19 clinical research ensures the participation – and meets the specific needs – of resource-constrained settings;
- **Identify drug candidates** for the treatment of mild-to-moderate COVID-19 and future viruses of pandemic potential; and

- **Advocate for accountability** from governments, industry, and the research community to ensure that COVID-19 R&D is driven by the public interest and that new health tools reach everyone who needs them.

Our goal is now to support the evolution of a new network of African-led research centres strengthening the response to emerging infectious diseases in resource-constrained settings, while maintaining our drug discovery efforts through open science partnerships.

ANTICOV: galvanizing a new network of research partners

In November 2020, **DNDi and a consortium of 25 prominent research institutions** from Africa and around the world joined forces to implement the **ANTICOV clinical trial**. The aim of the trial was to address gaps in research for treatments adapted for use in resource-constrained settings.

ANTICOV's flexible and innovative adaptive platform trial design allowed for study treatments to be added or removed as evidence emerged, providing missing data on efficacy in patients with mild-to-moderate symptoms. **By the end of 2022, enrolment had reached 1,753 patients** across 17 research sites in Africa and 10 in Brazil.

Importantly, the strengthened research networks and lessons learned enabled the launch of PANTHER, a wider African-led partnership capable of addressing emerging infectious diseases and pandemic preparedness on the continent.

PANTHER: preparing for future pandemics

PANTHER (the PANdemic preparedness plaTform for Health and Emerging infectious Response), developed out of the lessons learned and experience gained during the COVID-19 pandemic and the ANTICOV trial.

Launched in late 2022, PANTHER aims to contribute to the control of future epidemics or pandemics on the African continent through a flexible 'ready-to-use' clinical research platform, supporting preparedness and rapid response through the development and assessment of adapted tools, starting with therapeutics



Photo credit: Yaw Afrim Gyebi-DNDi



ANTICOV is a clear demonstration of the capacity in Africa to conduct robust and extremely complex studies.

Dr John Amuasi (centre) is pictured with his team at the Kumasi Centre for Collaborative Research in Tropical Medicine, Ghana – a research partner for the ANTICOV clinical trial.

and vaccines in Africa. PANTHER will prepare and provide human, technical, and scientific expertise on emerging infectious diseases through a network of equipped and experienced African research centres with healthcare sites in key population centres and more remote locations. African leadership will ensure alignment at the political and strategic level.

PANTHER's founding members are leading African scientific groups (CVD-Mali, FCRM, IRBD, and KEMRI) along with ANRS, BNITM, DNDi, ISGlobal, and ITM. DNDi is incubating the platform during its start-up phase by providing infrastructure support, expertise, and seed funding.

Drug discovery for pandemic preparedness

COVID Moonshot started as a spontaneous virtual collaboration in March 2020 when a group of scientists, academics, pharmaceutical research teams, and students began a worldwide, Twitter-fuelled race against the clock to identify new molecules that could block SARS-CoV-2 infection. Thanks to this unprecedented open collaboration of more than 150 scientists, **rapid progress was made to identify key compounds showing excellent antiviral activity** by targeting the main protease of SARS-CoV-2.

After initial pre-clinical testing in the second half of 2022, **DNDI-6510 was selected as the best candidate for further development**. DNDi is now coordinating work to advance the first-in-class compound towards

the clinic with support from the COVID-19 Therapeutics Accelerator. Our teams and partners are **now conducting full pre-clinical development and developing a formulation for Phase I studies** to prepare DNDI-6510 for future clinical trials for new COVID variants or other viruses of pandemic potential.

ASAP – the Artificial Intelligence (AI)-driven Structure-enabled Antiviral Platform – emerged out of COVID Moonshot in 2022. The project uses **cutting-edge technology to accelerate structure-based open science drug discovery** to deliver novel orally active antivirals for pandemics with the goal of equitable and affordable global access. DNDi teams are supporting the consortium's efforts in lead optimization and pre-clinical development.

Our work with partners on the **TMEM16F** series continued in 2022, with efforts focused on **advancing the series through lead optimization** to identify a lead compound that can be developed into an affordable, broad-spectrum antiviral. All medicinal chemistry work is being performed in India to further strengthen academic drug discovery capacity in the country.

The Nucleoside Booster project was launched in 2022 to identify potential lead or drug repurposing candidates with the broadest possible antiviral activity from a selection of nucleoside drugs. The partnership between DNDi and the German Center for Infection Research (DZIF) is **screening these drugs in a wide panel of in vitro cellular assays** for activity against families of viruses recognized by the World Health Organization as presenting the greatest epidemic and pandemic threats.

Learn more: dndi.org/covid-19