

Mass screening for drug discovery

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Research findings

In a pandemic there is little time to start drug development from scratch, and we took the decision early on to prioritise the screening of already approved drugs that could be repurposed and deployed immediately if shown to be effective against SARS-CoV-2 in our cellular antiviral screen.

We also decided to make any screening information immediately available via our SARS-CoV-2 Cellular Tracker webpage to prevent worldwide scarce resources being wasted on having to repeat experiments elsewhere. On this webpage we reported our own screening results and collected published information from anywhere in the world to report it in a single place as a useful tool for other researchers.

We screened 271 drugs ourselves and reported 1,545 results from elsewhere. We were in close liaison with clinical committees throughout this time and helped de-select, more than select, many compounds that were considered for COVID-19 human trials. We also reported potentially pro-viral compounds. In time, we had the bandwidth to also screen not yet approved drug compounds, and help develop a targeted SARS-CoV-2 main protease inhibitor drug as part of the COVID Moonshot project, a spontaneous global collaboration that came together to design a new, urgent antiviral treatment.

Personal experience of working through the pandemic

I was grateful that my and my group's expertise was needed and we could work throughout lockdown. We are indebted to everyone in the University who made this possible. Many people in decision-making positions and administration had to work very hard to enable so much important research to continue under such difficult circumstances. Having something meaningful to do and being able to contribute in a crisis also helped the mental wellbeing, to some extent, of group members and myself.

It also meant working full and often hectic days and long nights, being exhausted almost all the time, feeling helpless and frustrated that some things could not

be sped up further, and feeling overwhelmed by our unpreparedness in the face of a predictable and often-predicted pandemic, something that I hope Oxford will be instrumental in addressing ahead of future pandemics. I feel grateful for, and proud of, my research group, who pulled together and worked way beyond what anyone could have expected, and who were there for each other in these challenging times.

Working at Oxford

Setting up the antiviral screening arm of the COVID core facility in the Dunn School and later the Medawar building was no doubt an effort of many individuals and groups who gave of their time and expertise generously and selflessly, many on a voluntary basis for free and for prolonged periods of time in the midst of the lockdown, and with other difficulties weighing on their minds. This virus focused everyone's minds; people were thinking how their particular expertise might be useful and could be used to contribute to finding solutions that were needed on many different levels.

There are too many people within Oxford to mention who generously helped with their time, expertise and funding, Oxford being one of these few places where anything and anyone you could ever need is right at your door-step; people can be contacted informally and are usually quick to respond, and tend to go out of their way to help.

Funding impact

The first Coronavirus Research Fund grant enabled us to buy all the drugs we wanted to initially screen against this virus, and to set up the antiviral screening facility with all the personal protective equipment (PPE), consumables and other equipment needed. This uncomplicated and early funding was crucial in getting off to the necessary quick start. It then attracted several follow-up internal Coronavirus Research Fund grants also with collaborators.