

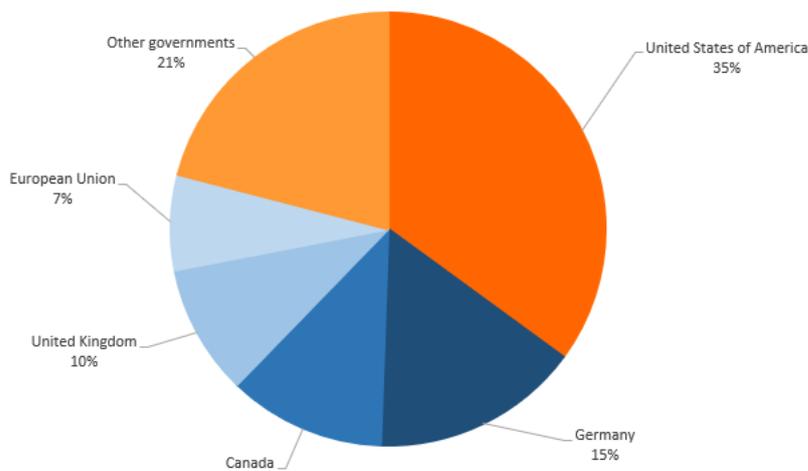
COVID-19 R&D TRACKER UPDATE: 15 JULY 2020

Monitoring COVID-19 R&D since January, the [COVID-19 R&D tracker](#) by Policy Cures Research seeks to help funders, policy makers, researchers and others understand the evolving COVID-19 R&D landscape. Below are some key takeaways around US\$7.3 billion¹ publicly announced funding for COVID-19 R&D and the product pipeline of at least 915 product candidates.

Most COVID-19 R&D funding has come from national governments

- The public sector provided the vast majority of funding for COVID-19 R&D, with announced commitments totalling just over \$6.6 billion. A further \$639 million has come from philanthropic organisations.
 - Funding from the pharmaceutical industry is mostly for in-house product development; as this investment is typically not announced publicly we lack good data on the scale of industry’s COVID-19 R&D commitments. Similarly, a lack of transparency around Chinese government funding for COVID-19 R&D means its investment isn’t reflected in the totals.
- The top 10 national governments who’ve publicly announced funding have jointly committed just under \$6.1 billion, more than 90% of total public funding. Of these, the US government in particular has focused its funding on domestic recipients, reflecting large grants to US-based pharmaceutical companies as part of Operation Warp Speed.

Chart 1. Top government funders for COVID-19 R&D



Source: Policy Cures Research

Vaccines are still a long way off

- Vaccines development efforts continue to make positive strides with at least 180 candidates in the pipeline, including 25 in clinical trials, with two novel candidates already undergoing large scale efficacy trials.
- However, there are areas of concern:
 - Only half of the vaccine candidates currently in human trials have verifiable, publicly available evidence demonstrating their effectiveness in animal studies. For the

¹ In our 25 June COVID-19 R&D tracker analysis, we said total R&D funding was nearly US\$8.5 billion, however, after reviewing BARDA’s grant to AstraZeneca for \$1.2 billion, we decided to declassify this as R&D funding and instead consider it as manufacturing and procurement which falls outside our scope. We aim to have funding for manufacturing and procurement displayed on our Tracker separately soon.

remaining candidates, results are either still awaiting publication or have not been shared publicly.

- Even though there are multiple vaccine candidates in mid-to-late stage human trials, so far only one has had its full phase I data published in a peer-reviewed journal, with partial results published for two more. A meta-analysis platform with the mandate to review both pre-clinical and clinical data generated from the ongoing trials is urgently needed.
- Finally, more than one-third of the clinical candidates do not meet the WHO's preferred characteristic of being a single-dose regimen vaccine. To carry out a global vaccine campaign involving multiple doses could be challenging.

More new therapeutics on the way

- Over 130 therapeutics, including direct-acting anti-virals and host-directed immunomodulators, are currently under clinical investigation. The vast majority (over 80%) of these drugs are already approved therapies repurposed for COVID-19.
- Results to date from clinical trials of these repurposed drugs have been largely underwhelming, and two front-running candidates - an HIV anti-retroviral and a rheumatoid arthritis drug investigated in large-scale trials - failed to meet the desired endpoints.
- The good news is that there are now at least 18 novel (new) anti-viral therapeutic candidates currently in clinical trials, up from almost none a month ago.
 - Most (12 out of 18) these novel anti-virals in clinical development are biologicals, with only two small molecule drugs having moved past proof of concept (both currently in phase II trials). The dominance of biologics is somewhat concerning given they have a limited track record in infectious diseases, especially in resource-limited settings.

Diagnostics getting faster

- There are close to 400 technologies - molecular, immunoassays and rapid diagnostic tests in development for diagnosing SARS-CoV-2, including 137 already approved through emergency use pathways.
- The most recent diagnostic tools approved by the US FDA include a point-of-care antigen-based test which provides results within 15 minutes. Unlike antibody-based rapid diagnostic tests (RDTs), an antigen test can be used for screening and triage; currently, there are over 20 such tests in development.

BARDA backs a range of treatments and diagnostics

- The \$1.6 billion in COVID-19 R&D funding from the US Biomedical Advanced Research and Development Authority (BARDA) has gone to more than 40 different recipients, compared to 24 recipients for both Ebola and Zika R&D combined.
- While BARDA has selected a broad range of recipients, most of its committed R&D funding is earmarked for its three largest contracts with Janssen, Moderna Therapeutics and Regeneron, which account for 83% of BARDA's committed funding. More than half of BARDA's individual COVID-19 funding contracts are for diagnostics, but these collectively account for 3% of its total funding.
- In addition to its funding for biomedical R&D, BARDA has committed around \$4 billion to support the large-scale manufacture and procurement of successful vaccine candidates, including several grants for syringe and vial manufacture (these grants are not included in the COVID-19 R&D tracker because they aren't primarily for R&D).

CEPI more than doubled its number funders, but most new funding came from existing backers

- Of the \$1.18 billion committed to CEPI starting in 2020, 16 new funders committed \$336 million, about 29% of the total. Of these new funders, 11 are national governments, and five are a mix of private sector donors and charitable foundations.
- CEPI's existing funders provided the remaining \$841 million (71%), including supplementary funding from six of its ongoing public sector funders and the European Commission.
- The main providers of philanthropic funding prior to 2020 – the Bill & Melinda Gates Foundation and the Wellcome Trust – have mostly directed their COVID-19 funding via alternative vehicles, notably the Gates Foundation's Therapeutics Accelerator.

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