Mapping of Global Public Funding for Covid-19, ver.1

Universities Allied for Essential Medicines (UAEM)
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1. Introduction

COVID-19 diagnostics, therapeutics and vaccines are critical in the global effort to flatten the curve and reduce the burden on currently overworked healthcare systems worldwide. These developments will be essential in order to achieve the gradual reduction in self-isolation policies. When these life-saving COVID-19 innovations are hopefully discovered, they will inevitably have had public taxpayer funding supporting their research and development.

Research regarding COVID-19 diagnostics, therapeutics and vaccines has increased significantly over the past months. As of May 18th, 2020, the United States (U.S.) has allocated over $3.1 billion towards research into these key areas, in addition to $1 billion to the National Institute of Health (NIH) and $836 million to the National Institute of Allergy and Infectious Diseases (NIAID). Canada has contributed over $1.1 billion while Australia has invested over $30 million respectively. Many other countries have invested significant public funds into COVID-19 research projects in the race to curb the pandemic.

This mapping initiative is a global mapping tool, highlighting publicly funded COVID-19 diagnostic, therapeutic and vaccine research projects at university institutions in 13 countries in North America, Europe, Australasia and East Asia. The countries listed in this first version include the United States, Canada, Australia, New Zealand, Austria, Belgium, Denmark, Germany, France, the Netherlands, Sweden, the United Kingdom and South Korea. These regions were included as they all have active UAEM student chapters who were able to lead the data collection and analysis. University research projects from additional European countries and South America will be included in future releases. Only projects specifically addressing COVID-19 (or coronavirus) were included in this report. However, most diagnostic, therapeutic, and vaccine research on viruses such as coronaviruses draws from existing research on HIV/AIDS, Hepatitis C, Ebola, and influenza, for example. These pools of existing research were not included in our search criteria.

2. Objectives

The objectives of this initiative were to evaluate the distribution of public funding for both preclinical and clinical research endeavors related to the development of COVID-19 diagnostics, treatments, and vaccines at universities across the world. By visualizing where public funding is being directed, this tool is designed to be used to hold research universities and publicly-funded institutions accountable to their responsibilities to the public and to better ensure access to and affordability of these life-saving innovations.
3. Methodology

The general methodology used publicly available sources for data collection and consisted of: a) Surveying national government databases for COVID-19-related research projects; b) Using Google as a search tool to survey new COVID-19-related research not yet listed in government databases. The search strategy used the key terms “coronavirus” or “SARS-CoV-2” or “COVID-19” research and the corresponding university name.

The inclusion criteria for this project was university-affiliated research projects receiving public funding related to the development of a vaccine, therapeutic, or diagnostic for coronavirus, COVID-19, or SARS-CoV-2.

The methodology was generally consistent across the United States, Canada, Australia, New Zealand, and European countries. There were minimal modifications to this methodology across these different regions, and these differences will be delineated in this section.

As we are relying on publicly available data for this mapping tool, we acknowledge that the data presented may not be fully comprehensive. The actual amount of funding received by each university may not be available, posing an obstacle to full transparency and accountability.

North America

United States

The initial evaluation of American universities was limited to those which attracted the highest levels of funding from public biomedical research funding agencies and were originally listed in UAEM’s US University Report Card: Global Equity in Biomedical Research. In order to select this list of universities, the total US National Institutes of Health (NIH) funding received by universities between 2010-2012 was added to the total National Science Foundation (NSF) funding received by universities within that same time period. The U.S. funding data was obtained primarily through a detailed search using the NIH Research Portfolio Online Reporting Tools (RePORT)⁵.

The U.S. data collection team used the following search terms in order to obtain a macroscopic understanding of the level of research being conducted nationwide: “coronavirus,” “SARS-CoV-2” and “COVID-19.” The time frames that were evaluated included active projects in 2003-2018, and 2019-2020, in order to emphasize the significant increase in funding activity in the last year. Next, the data collection team used Google as a search tool to cross-reference the projects identified through the NIH RePORT tool to the publicized trials in different social media and news outlets in order to ascertain a more comprehensive understanding of the active projects currently under development. Additional university research institutions supported by public funding were added during this search process. Each of the identified projects and their corresponding funding amounts were cross-checked by at least three individuals of the data collection team.

Canada

Universities in the U15⁶ were included in the Canadian methodology, as these are the leading Canadian research universities and those also listed in UAEM’s Canadian University Report Card. The data collection process was slightly modified for Canadian data collection due to the existence of a government database of funded COVID-19-related projects. First, the Canadian Institutes of Health Research (CIHR) website was evaluated, which contained a detailed list⁷ of the funded COVID-19 research projects, including the title of the study, the principal investigator(s), a description of the study, and the amount invested. These projects were classified under one of the
following categories: clinical management, diagnostics, therapeutics, transmission dynamics and animal host investigation, vaccine development, governance and logistical studies, public health, and social dynamics and trust. Secondly, this list was then cross-referenced with the Funding Decisions Database⁵ on the CIHR website to confirm that there were no funded studies omitted from the original list. The search terms used were as follows: “operating grant/COVID-19/therapeutics”, “operating grant/COVID-19/vaccines”, and “operating grant/COVID-19/clinical management.” Third, the data collection team used Google as a search tool to identify any new COVID-19 university research projects not listed on the CIHR website nor documented in the Funding Decisions Database. Each of the identified projects and their corresponding funding amounts were cross-checked by at least two individuals of the data collection team.

Australasia

Australia

In Australia, the data collection team focused on recent and ongoing COVID-19 research projects. Australian universities in the Group of Eight⁶ were included in this list, as these are ranked as Australia’s leading university research institutions. First, the team searched the Australian New Zealand Clinical Trials Registry¹⁰ and the Australian government Australian Clinical Trials¹¹ registry clinical trials related to COVID-19. Next, the Australian National Health and Medical Research Council (NHMRC)¹² page was checked for relevant university research projects. Funding data for NHMRC supporting projects was determined from their website¹². Other public funding agencies receiving NHMRC funding such as APPRISE Centre of Research Excellence’s COVID-19 fast-tracked new project list were checked for research related to COVID-19. Funding data was then cross-checked with the Australian government’s grant information system, GrantConnect. The following search terms were used to determine which studies were relevant to COVID-19: “COVID-19”, “coronavirus”, and “SARS-CoV-2”. Projects funded by the MRFF were determined from their grant_recipients_list¹⁴. Each university’s website news outlet was then checked for COVID-19-related research. Next, the data collection team used Google as a search tool to check different social media and news outlets to identify any additional ongoing COVID-19 research at each university. Each of the identified projects and their corresponding funding amounts were cross-checked by at least two individuals on the data collection team.

New Zealand

The New Zealand data collection team also focused on recent and ongoing COVID-19 research. All New Zealand universities were included in this search (University of Auckland, University of Otago, Massey University, Victoria University of Wellington, University of Canterbury, Lincoln University, Auckland University of Technology, and University of Waikato). A media release from the New Zealand Health Research Council¹⁴ was first used, which lists ongoing government-funded studies relevant to COVID-19. This release details the study title, principal investigator, university, and amount funded. Next, the data collection team used Google as a search tool to check different social media and news outlets to identify any additional ongoing COVID-19 research. Each of the identified projects and their corresponding funding amounts were cross-checked by at least two individuals on the data collection team.

Europe

In Europe, the data collection team needed to substantially adapt the methodology due to the heterogeneous landscape of public funding, as well as how this is reported, across European Union (EU) countries. As this made it difficult to restrict the search to particular databases, a variety of data sources were used. These included the websites of a) national and EU governments and relevant ministries, b) universities, c) national public health
institutes, d) major public funding institutions for biomedical and health research, and d) European Clinical Trials. In addition, the European data collection team also used Google as a search tool to identify additional research projects as well as to cross-reference the already identified projects for missing and/or further information. For every project, where possible, the following information was sought: funding institution, type of funding institution, recipient institution, project title, amount of funding, funding mechanism, research stage, research focus, and timeline.

East Asia

South Korea
The South Korean methodology included public research universities, leading private research universities, institutes of science and technology, relevant postgraduate-only institutes, universities with medicine programs, and universities with pharmacy programs. Eliminating repeating results, the data collection team analyzed 59 universities that would likely conduct research on the development of COVID-19-related diagnostics, treatments, and vaccines.

The team collected data through four channels: a) National Science & Technology Information Service (NTIS, 국가과학기술지식정보서비스), which provides information on publicly funded research and development projects; b) Google search, of which results were confirmed with official university websites if possible; c) ClinicalTrials.gov, and; d) Pharmaceutical Integrated Intelligence System (의약품안전나라 의약품통합정보시스템), the Korean equivalent of ClinicalTrials.gov. Search entries used for NTIS and Pharmaceutical Integrated Intelligence System were “코로나19” (Corona 19) and “SARS-CoV-2”. Data regarding funding was only available on NTIS. All findings, such as projects and funding details, were cross-checked by at least two individuals on the data collection team.

4. Descriptive analysis

North America

United States
Sixty of the top research institutions in the country are all concurrently working on COVID-19-related research projects. Specifically, fifty-eight out of sixty universities are focusing on COVID-19 vaccine development, diagnostic testing, and therapeutics. Two out of sixty universities are investigating the epidemiology of COVID-19.

Canada
The Canadian government has invested more than $78 million CAD into COVID-19 research on vaccines, therapeutics, and diagnostics. Twenty universities in Canada are conducting COVID-19 research, including each of the U15 member universities. Funding sources across these twenty universities include, but are not limited to, the Canadian Institutes of Health Research, Genome Canada, and other public sources. The greatest investment is into vaccine research, with a total of over $37 million CAD allocated across eight institutions. The University of Saskatchewan has received the highest amount of public dollars, with nearly $1 million from the CIHR and an additional $23.3 million federal investment into vaccine research. Thirteen of the universities are conducting therapeutics research with a total public investment of nearly $31 million.

Australasia
Australia
The Australian government has invested more than $36 million AUD thus far into COVID-19 research. At least three universities from the Group of Eight are involved in vaccine research; these universities include the University of Queensland, the University of Melbourne, and Australian National University. Researchers at the University of Sydney, the University of Western Australia, Monash University, and the University of New South Wales are investigating diagnostic tools and potential therapeutic treatments.

The University of Queensland has received over $27 million AUD in funding for vaccine and therapeutics development. This mapping project has highlighted at least $19 million AUD granted to the University of Melbourne for its various COVID-19 projects. The University of Sydney has focused primarily on diagnostic tools development and epidemiological studies, with funding granted from the Center of Research Excellence in Emerging Infectious Diseases (CREID) and the Australian Partnership for Preparedness Research on Infectious Disease Emergencies (APPRISE). The University of New South Wales has been prolific in their research endeavors, with thirteen COVID-19 projects currently underway.

New Zealand
New Zealand’s Health Research Council has announced over $3.8 million NZD in funding for COVID-19 research, of which $2 million NZD has so far been allocated to three universities for diagnostics, therapeutics, and vaccines. The University of Auckland has received over $1 million for multiple research projects, including vaccine research and clinical trials of various therapeutics. The University of Otago has received $665,246 for its work on a COVID-19 screening pathway and hydroxychloroquine trials through the Medical Research Institute of New Zealand. Massey University has received $165,471 from the Health Research Council for diagnostics research.

Europe

Austria
From our mapping, Austrian universities have been allocated €413,324 in public funding, towards research and development of COVID therapeutics and diagnostics, however many of the funding amounts were undisclosed therefore this number is higher. Note that no vaccine focused research was found to be publicly funded at universities in Austria. The Medizinische Universität Wien (Medical University of Vienna, MUW) is the most publicly funded university in Austria when it comes to research related to COVID-19. The university received a grant worth €290,000 from the European Commission and a grant worth €49,277 from the WWTF (“Wiener Wissenschafts-, Forschungs- und Technologiefonds”), Veterinärmedizinische Universität Wien was allocated €49,500.00 from WWTF, all three were to are focused upon research into diagnostics. A grant worth €24,547.00 was allocated to Universität für Bodenkultur Wien) gto conduct research into treatments.

Out of the twelve publicly funded university research grants we identified in Austria, the grant amount was only available for four projects. Additionally, €26 million from the Austrian government still remains to be distributed amongst universities, PRIs and companies.

Belgium
From our mapping so far €5,401,612.60 is confirmed to have been allocated to universities in Belgium to conduct COVID-19 research. This amount has been allocated across two universities; Universitair Ziekenhuis Gent and
Katholieke Universiteit Leuven. Universitair Ziekenhuis Gent received 6 grants which amount to a total of €2,668,800, 3 projects were focused on treatment research with the other 3 focusing on diagnostic research. Katholieke Universiteit Leuven received 4 grants which amount to a total of €2,732,813 focused on research into COVID-19 therapeutics.

Denmark
€4,906,657 of public funding has been allocated to universities and university hospitals in Denmark, across a total of 9 research projects involving 10 different university and university hospitals. The majority of research was conducted into therapeutics and diagnostics with just one project focused upon vaccine research. The biggest single grant allocated to a university was worth €1,085,715 and was given to the Technical University of Denmark from the European Commission for research into diagnostic kits.

France
A total of 32 university research projects into the research and development of COVID vaccines, therapeutics and diagnostics have received public funding in France. A total of 28 are focused upon research and development of therapeutics. Exact funding amounts were publicly available for just three of these projects. Aix-Marseille University has received €350,125 and €692,406 from European Commission for the SCORE (treatment) and Convat (diagnostic) projects respectively.

On March 12th 2020, the Ministry of Health and Solidarity and the Ministry of Higher Education, Innovation and Health announced its financial support for twenty projects selected by two consortia of academic research institutes, REACTing (led by the French National Institute of Health (INSERM)) and Aviesan (C.E.A., C.N.R.S., INRAE, INRIA, I'INSERM, Pasteur Institute, the I.R.D., C.P.U. and general directors of all regional and university hospitals). A total of 8 million Euros was committed to twenty different projects conducted at different public institutes and universities, including Sorbonne University, Paris 13 University, and Aix-Marseille University. Likewise, the French National Agency for Research (ANR) is spending €14.5 million to fund 49 projects conducted at different public research institutes and universities on a wide range of topics ranging from research on diagnostics to potential therapies.

Germany
A total of €11,113,578 of Euros of public funding has been allocated across 20 different German universities. Of the funding total €8,562,790 is directed towards research into potential treatments with the remaining €2,550,787 towards vaccine research.

So far, the European Commision allocated €2,713,385 to 9 German universities for COVID-19 research (last updated May 30th 2020), including Eberhard Karls University Tübingen, Charité University in Berlin, University Ulm, University Duisburg-Essen, Ludwigs-Maximilian University München and Technical University München, the Tierärztliche Hochschule Hannover, the Justus-Liebig University Giessen, and the University Lübeck. Additionally, the German state Baden-Würtemberg funded 4 universities with a total of €1.2 Million. We found over 50 additional grants already or still to be allocated to universities which have not yet published the amount of funding which can, at this point of research, not be included in this analysis. An example is the German BMBF (Bundesministerium für Bildung und Forschung/ Federal Ministry of Education and Research), which closed their application for grants on May 11, 2020 and will provide grants up to 10 million each. Additionally, EU Projects such as the European & Developing Countries Clinical Trials Partnership (EDCTP) and the Innovative Medicines Initiative should be further tracked, since several German Universities applied for these grants. We will update the data file in the upcoming weeks and months.

Netherlands
A total of €55,336,071 has been allocated to universities in the Netherlands across 16 different research projects, involving 8 different universities. In a first wave of funding, a total of €5.5 million has been made available for research related to COVID-19 by the Dutch Ministry of Health, Welfare and Sport, the Dutch Research Council (NWO) and ZonMw (The Netherlands Organisation for Health and Development). Eight studies have been selected for these grants, the recipients remain, however, to be announced. In a second wave of funding, €27 million of public funding will be made available through ZonMw and NWO. The Netherlands Organisation for Applied Scientific Research (TNO) has made €9 million available. The recipients of this public funding are not known yet.

**Sweden**
From the data available, €6,459,796 of public funding has been allocated to universities in Sweden. The grants were allocated across 14 research projects across 6 different universities, the majority of which were awarded to Karolinska Institute. Four of the grants were funded by the European Commission (EC) and came to a total of €5,779,281. The other twelve grants allocated to universities were funded by the Swedish Government to fund projects conducting fundamental research into diagnostics or to increase understanding of the virus and the human response mechanism.

**United Kingdom**
The United Kingdom (U.K.) government has been one of the largest public funders of research and development into COVID-19 health technologies. In total UK universities have been allocated around €28 million in public funding, of this, €10,338,499 is dedicated towards research and development of vaccines, therapeutics and diagnostics. However this figure may increase as further grantees are announced.

The Department of Health and Social Care in conjunction with the National Institute of Health Research and the UK Research and Innovation committed €27.5 million towards U.K. based research projects hosted by public sector institutions and universities that aim to tackle the COVID-19 crisis. The Medical Research Council has also provided €0.559 million each to Imperial College London, for disease analysis, and the University of Glasgow for virus research. Despite the significant public funding, including funding going towards twenty-five university-based projects, from our research, we found no safeguards to ensure publicly funded products will be affordable and available to everyone who needs them, but the University of Oxford has made public statements close to that effect.

Projects include efforts to scale up vaccine manufacturing processes, clinical trials, epidemiological studies, and, importantly, the development of potential therapies, vaccines and diagnostic tools. The largest recipient of these grants is the University of Oxford who have received €8.72 million, including €2.53 million for the testing of a promising vaccine. Imperial College has received approximately €6.65 million, including €0.69 million for an experimental antibody therapy, €0.46 million for a diagnostic test and €1.9 million for the development of a promising vaccine.

**East Asia**

**South Korea**
In South Korea, our search found 24 ongoing research projects regarding COVID-19 vaccines, therapeutics, or diagnostics. Of these projects, only five had disclosed the amount of public funding they received, which poses a

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1 The term approximately is used because some grants are split with other universities, and the ratio of allocation between the universities was not stated.
barrier to full transparency and accountability. At least ₩412,500,000 has been invested into research regarding COVID-19 therapeutics at Yonsei University, Jeonbuk National University and Chungnam National University, and at least ₩39,000,000 has been allocated for COVID-19 diagnostics research at Gwangju Institute of Science and Technology. Considering that additional university research projects and joint research projects with public research institutes have not disclosed funding details, the total amounts of public funding found from our project are likely lower than the actual amount of public funding spent on the research and development of COVID-19 therapeutics, diagnostics, and vaccines.
5. References

