CEPI

Coalition of Epidemic Preparedness Innovations (CEPI) and the Netherlands
6 May 2022

The Government of the Netherlands is a valued CEPI investor: it has provided EUR 50M in funding for CEPI's investments in COVID-19 vaccine R&D for 2020-21, and has participated in CEPI governance as a member of CEPI's Investors Council. The Council nominates investor representatives to CEPI's Board (the coalition's primary governing body) and has some rights including approval any single investments over USD 100M.

The Netherlands stands as a beacon for its contributions to global health through its world-leading role in vaccine research, development, and production. Netherlands-based companies and research institutions including Wageningen Bioveterinary Research, Wageningen University Research, Janssen Vaccines & Prevention, the European and Developing Countries Clinical Trials Partnership, and Viroclinics Biosciences are at the forefront of CEPI's work.

To date CEPI has approved up to USD 14.7M to Netherlands-based lead partners (see Table 1: CEPI Lead Partners, Netherlands) and up to USD 50.5M to Netherlands-based sub-awardees (see Table 2: CEPI Sub-Awardees, Netherlands) to progress work against COVID-19 and other emerging infectious diseases, like Ebola and Rift Valley fever

Dutch companies and research institutions are encouraged to apply to our Calls for Proposals, which invite research teams, vaccine developers, and others from around the world to apply to our scientific programmes to advance the development of vaccines against epidemic and pandemic threats. CEPI also organises TechTalks to provide interested parties with a broader understanding of a CEPI Call for Proposal and/or see if their idea, project, technology, or approach meets our suitability and eligibility requirements.

Examples of CEPI partnerships with Netherlands-based institutions/companies

The European and Developing Countries Clinical Trials Partnership (EDCTP), The Hague

EDCTP and CEPI have provided funding to support the Lassa fever candidate of the International AIDS Vaccine Initiative (IAVI) into advanced stage clinical development, using sites in Liberia, Nigeria, and Sierra Leone. . (The 14 June 2021 press release may be of interest.) The project is co-funded by CEPI and EDCTP (Lassa Fever Vaccine Efficacy and Prevention for West Africa, or LEAP4WA).

The project is for a Phase 2b trial to evaluate the safety and efficacy of the recombinant vesicular Stomatitis Virus (rVSV)-based vaccine. An oversight committee including external experts and one representative from CEPI has been constituted, with the first meeting expected in June 2022. The study is tentatively scheduled to start in Q2-Q3 2023 and will run until Q4 2024.

Janssen Vaccines & Prevention B.V., Leiden

CEPI has awarded funding to Janssen Vaccines & Prevention B.V. for two Ebola vaccine post-licensure studies: (i) vaccination of pregnant women in Rwanda (2020-2024) and (ii) assessing long-term immunogenicity in children and adults in Guinea, Liberia, Mali, and Sierra Leone a (2020-2023) (PREVAC-UP, the Partnership for Research on Ebola Vaccinations).

Both studies are gathering information on the safety and immunogenicity of Janssen's Ebola vaccine regimen. One quarter of the more than 2,000 women recruited in Rwanda have completed the study, as have more than 1,300 infants. In the PREVAC-UP study, blood draws have taken from study participants 2 and 3 years post-vaccination.

Wageningen Bioveterinary Research (WBVR), Lelystad

Wageningen Bioveterinary Research (WBVR) offers CEPI services in BSL3 biocontainment and experience handling CEPI pathogens of importance (such as SARS-CoV-2, MERS, and Rift Valley Fever) with aerosol exposure capabilities. They have strong policies in animal ethics compliance and deep experience performing vaccine and countermeasure development experiments under contract to government, commercial, and non-profit sponsors. The research is based on detailed study protocols, high-quality data reporting, SOP based quality system with report output of high quality for regulatory agencies. Their regulatory system focusses on maintaining scientific integrity with traceability back to raw data.

A five-year implementing partnership agreement (IPA) was signed between CEPI and WBVR in April 2020. To date, CEPI has placed nine projects, called service orders, onto this IPA for performance in contract periods of time dictated by the individual service orders. The projects have been in support of development of laboratory methods for preclinical coronavirus modelling, methods for improvement of animal handling, and experimental endpoint measurement and for vaccine testing in support of Clover Biopharmaceuticals COVID-19 vaccine candidates -one of CEPI's vaccine development partners.

Some of the preclinical modelling work has resulted in a reproducible small animal model of moderate to severe human COVID-19 disease. CEPI's investment in the usage of telemetry and animal enrichment methods, activity tracking electronics with software, and plethysmography for respiratory function assessment has led to improved data collection in these models on vaccine studies, including providing critical data to advance the development of Clover's COVID-19 vaccine candidates. For example, the studies have consistently shown faster clinical recovery post SARS-CoV-2 challenge following vaccination, as well as milder pathological lesions (indicating that less severe pneumonia was present) and lower viral loads. The data produced by the WBVR team has been taken forward by Clover to European and national regulatory authorities for evaluation of their product for approval for human use.

Wageningen University Research

Wageningen University Research (WUR) is the lead for a Rift Valley fever vaccine candidate. The LARISSA project (refers to the name of the consortium developing the vaccine candidate) stands for Live Attenuated Rift valley fever vaccine for Single Shot Application. The consortium includes Wageningen Bioveterinary Research, Bunyavax (a commercial spin off of WUR and WBVR), CR2O (a contract research organization from the Netherlands), IDT Biologika (biotech vaccine manufacturer out of Germany), Research Center for Emerging Infections and Zoonoses (Germany) and Center for Vaccinology (part of Ghent University in Belgium).

The Rift Valley fever vaccine candidate will soon go into human use trials. Wageningen has submitted its Investigational New Drug application (IND) and expects first vaccinations to occur in June. IDT has released clinical trial material that has met all specifications and is suitable for use. CEPI is expecting to issue a second Call for Proposals for Rift Valley fever vaccines in the next few months and expects Wageningen to apply for support for a Phase I/II in an country where Rift Valley fever is endemic (most likely Kenya).

Viroclinics Biosciences

Rotterdam-based Viroclinics Biosciences B.V. is one of 11 labs in CEPI's centralised laboratory network. It has been part of the network since October 2020 and CEPI's contract with them lasts five years. Viroclinics has been working on COVID-19 vaccine testing and has produced virus stocks for the whole network. It has recently applied to work with CEPI on new virus pathogens and CEPI is looking into expanding our contract with them.

The Dutch Population has Benefitted from CEPI Investments in 3 European Medical Association-Authorized Vaccines

The Dutch population has benefitted from CEPI funding of up to USD 784M to the University of Oxford and AstraZeneca, Novavax and Moderna, whose vaccines are authorised by the European Medical Association for use in Europe. See Our portfolio – CEPI for details of CEPI's portfolio of COVID-19 vaccines (one of the largest and most diverse in the world, as well as our investments in other emerging infectious diseases).

CEPI Technical Support Available to the Government of the Netherlands

CEPI stands ready to provide technical support to the Government of the Netherlands, including in the development of its pandemic preparedness plans and as it prepares to host the 2nd Local Manufacturing Production Forum in 2023. Pandemics cannot be beaten in isolation: national pandemic contingency plans are only effective if they also pay attention to, and invest in, the international health security system.

Direct benefits of CEPI to High-Income Countries

CEPI is the only global organisation dedicated to global epidemic and pandemic R&D and able to deploy the benefits of its work to where it is most needed.

- Some national pandemic plans might focus on a handful of emerging infectious diseases, others might only focus on seasonal threats like influenza, and other nations currently have no pandemic protocols.
- CEPI, however, is monitoring all of the priority pathogens it believes pose a threat to human health security and is primed to respond to them at a moment's notice.
- In response to COVID-19, CEPI developed the largest and most diverse portfolio of candidate vaccines, at an unparalleled pace (including providing substantial funding for the Oxford/AstraZeneca and Novavax vaccines and critical catalytic funding for the Moderna vaccine).
- The next time there is a pandemic threat—and there will be a next time—the diversity of the global vaccine portfolio may be crucial in hedging R&D risk and maximising chances of success.
- As part of CEPI's next five-year $3.5 billion plan, we will create a library of exemplar vaccine candidates – built on platform technologies that are familiar to regulators – against viral families known to infect human beings.
- When the next Disease X emerges, CEPI will then work with global partners to take these exemplar vaccines or adaptations thereof into the clinic so that we can develop safe and effective vaccines against emerging threats in 100 days.
- Recognising the ongoing threat posed by SARS-CoV-2-19 variants, CEPI has also brought forward core parts of its $3.5 billion plan to start development of "all-in-one coronavirus vaccines" (ie, vaccines that provide broad protection against SARS-CoV-2 variants and betacoronaviruses more generally).
- To combat the ongoing threat of SARS-CoV-2 variants, CEPI has also established six partnerships with developers to create vaccines that are effective against these variants, which are based on a wide array of technologies. Development partners include: SK Bio (Recombinant protein; South Korea), VBI vaccines (Enveloped-virus like particle; USA), Shanghai Zerun (Chimeric protein; China); Gritstone (self-amplifying mRNA; USA); University of Hong Kong (Live attenuated; Hong Kong); and Clover (S-trimer; China).

CEPI takes an active approach to the management of the vaccine candidates that it supports to maximise our chances of success.

- In the context of COVID-19, the progress of our vaccine candidates is regularly assessed against our core investment criteria (speed, scale, access) by our team of leading vaccine-development and manufacturing experts.
- Our vaccine development partners also receive close support and guidance from our expert team. For instance, some of our biotech partners might require support to establish large-scale manufacturing capabilities, so CEPI uses its global networks to connect them with organisations that have available manufacturing capacity so that vaccine can be produced at scale around the globe. Examples of such partnerships include the manufacturing partnership between Novavax and SK Bio.
- We constantly review the vaccine development landscape to identify the most promising candidates to invest in. CEPI currently has a rolling call for proposals, which invites vaccine manufacturers around the world to submit their funding applications for review by the CEPI R&D team.
- Finally, active management entails the ongoing evaluation of lessons learned so that the development strategy is constantly improved.

The "multiplier effect" of CEPI investments

By investing in CEPI, countries channel R&D funding that amplifies their national investments, bringing both direct domestic benefits and serving the global good. Investor funding enters into CEPI's common pool of funding, amplifying the impact and reach of their funding. For example, a unilateral investment of USD 10 M could fund one clinical trial of a vaccine in a few hundred participants or – when aggregated with other funders through CEPI - it could contribute to multiple clinical trials around the world recruiting tens of thousands of people.

Low- and middle-income country engagement

- Equitable access is the driving force behind CEPI's ambitious programme of R&D, which aims to prepare now for future threats in a way which benefits the entire world.
- Achieving equitable access to vaccines for future pandemics requires a renewed focus on increasing the geographical diversity of vaccine manufacturing capacity – particularly in low- and middle-income countries (LMICs)– so that all regions can take control of their health security.
- CEPI 2.0 will enable equitable access through our relationships and strategic partnerships. CEPI will formalise and strengthen partnership agreements with organizations that can support the development of regional infrastructure and expertise in LMICs to undertake the clinical studies and enabling science activities required to advance vaccine development, support technology transfers, develop national and regional manufacturing capacity and engage with local and regional regulatory authorities to enable countries to take ownership of their national health security.
- Through diversifying manufacturing: CEPI will drive innovation and manufacturing in the global south by supporting a range of activities from tech transfer, to providing know-how, to training and development of a qualified workforce and including stringent provisions in partner development plans both around access and supporting local capacity development. More broadly, CEPI will support the development of manufacturing capacity in LMICs by leveraging strategic alliances to build an integrated scalable on-demand network of

regional private and public manufacturing facilities to rapidly meet future global vaccine demand. This work has already begun through Memorandums of Understanding (MOUs)with the African Union & Africa CDC and the IFC, both of which aim to boost vaccine production on the African continent.

An investment in CEPI would support the Netherlands both on a national but also global basis

- The Dutch Government and vaccine developers in the country would have access to a coalition of global health and scientific experts working together to tackle diseases that threaten the world.
- Through increased investment and scientific collaborations, CEPI could also work with Dutch partners such as UMC Utrecht for example through VACCELERATE (a network across Europe for clinical trials for the coordination and conduct of COVID-19 vaccine trials).
- Further support and expertise will not only protect the Netherlands from future pandemics, but also Europe and the world. As we have learned with COVID-19, nobody is safe until we are all safe. CEPI's role is critical to ensure the whole global health system functions in a way that can help prevent the next pandemic as well as respond more effectively when the next 'Disease X' hits.
- This would also support a number of Dutch initiatives now being launched in response to the pandemic, including the upcoming Dutch global health strategy policy framework. An investment in CEPI would be of key importance and utility to this framework.

Table 1: List of CEPI Lead Partners, Netherlands, as of 4 May 2022

Lead Partner	Project Name	Sum of Cost (incl IDC)
European and Developing Countries Clinical Trials Partnership (EDCTP)	European and Developing Countries Clinical Trials Partnership (EDCTP) EDCTP Lass	USD 8,428,965
Subtotal		**USD 8,428,965**
Janssen Vaccines & Prevention B.V.	Janssen Ebola PREVAC-UP	USD 177,182
	Janssen Ebola Rwanda	USD 314,376
Subtotal		**USD 491,559**
Wageningen Bioveterinary Research (WBVR)	Wageningen SO1 COVID-19 - Animal Model	USD 1,409,236

	Wageningen SO2 BSL3/4	USD 203,834
	Wageningen SO3 COVID-19 Animal Model	USD 490,019
	Wageningen SO4 COVID-19 Clover Passive Transfer	USD 213,046
	Wageningen SO5 COVID-19 CEPI-WBVR	USD 345,056
	Wageningen SO6 COVID-19 Clover New Variant Construct Study	USD 262,979
	Wageningen SO7 COVID-19 Clover S Trimer 3	USD 250,979
	Wageningen SO8 COVID-19 DTS Delta Study	USD 204,017
	Wageningen SO9 Covid-19 BSL3/4	USD 641,637
Subtotal		**USD 4,020,808**
Wageningen University & Research (WUR)	Wageningen RVF	USD 1,730,024
Subtotal		**USD 1,730,024**
Netherlands Total, Lead Partners		**USD 14,671,357**

Table 2: List of CEPI Sub-Awardees, Netherlands, as of 4 May 2022

Consortium Partner	Project Name	Sum of Cost (incl IDC)
Artemis One Health	Wageningen RVF	USD 449,462
Subtotal		**USD 449,462**
Batavia Biosciences B.V.	IAVI Lassa	USD 9,033,145
	University of Tokyo Nipah	USD 10,242,869
Subtotal		**USD 19,276,015**
Biomedical Primate Research Centre (BPRC)	Wageningen RVF	USD 410,000
Subtotal		**USD 410,000**
BunyaVax B.V.	Wageningen RVF	USD 717,795
Subtotal		**USD 717,795**
CR2O B.V.	IDT MERS	USD 8,307,935
	Wageningen RVF	USD 2,845,886
Subtotal		**USD 11,153,822**
Erasmus Medical Center	IDT MERS	USD 2,634,921
Subtotal		**USD 2,634,921**
Eurofins Microsafe Laboratories	Valneva Chik	USD 240,514
Subtotal		**USD 240,514**
European Medicines Agency (EMA)	IDT MERS	USD 73,500
Subtotal		**USD 73,500**
Janssen Vaccines & Prevention B.V.	Oxford Lassa	USD 193,910
	Oxford MERS	USD 13,400,655
	Oxford Nipah	USD 193,910
Subtotal		**USD 13,788,476**
ProCare B.V.	Themis Lassa	USD 5,887
Subtotal		**USD 5,887**
Viroclinics	CureVac COVID-19	USD 377,118
	Themis Chik	USD 28,049

	UQ COVID-19	USD 155,523
	UQ Platform	**USD 1,226,305**
Subtotal		**USD 1,786,997**
Netherlands Total, Sub-awardees		**USD 50,537,393**