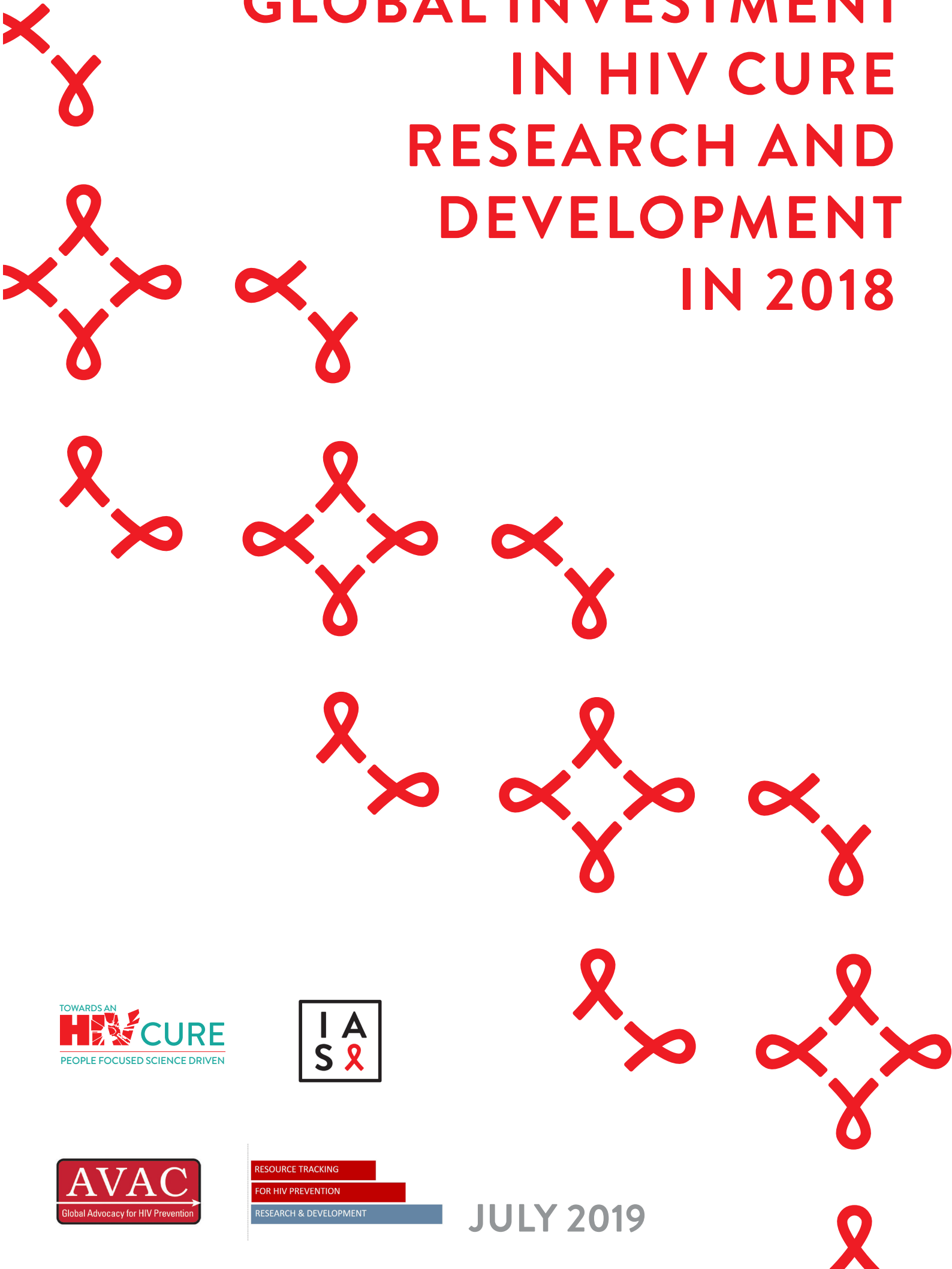


GLOBAL INVESTMENT IN HIV CURE RESEARCH AND DEVELOPMENT IN 2018



TOWARDS AN
HIV CURE
PEOPLE FOCUSED SCIENCE DRIVEN



AVAC
Global Advocacy for HIV Prevention

RESOURCE TRACKING
FOR HIV PREVENTION
RESEARCH & DEVELOPMENT

JULY 2019

A GLOBAL STRATEGIC APPROACH TOWARDS AN HIV CURE

Antiretroviral treatment (ART) has radically changed the face of HIV infection, from a lethal disease into a manageable chronic condition.

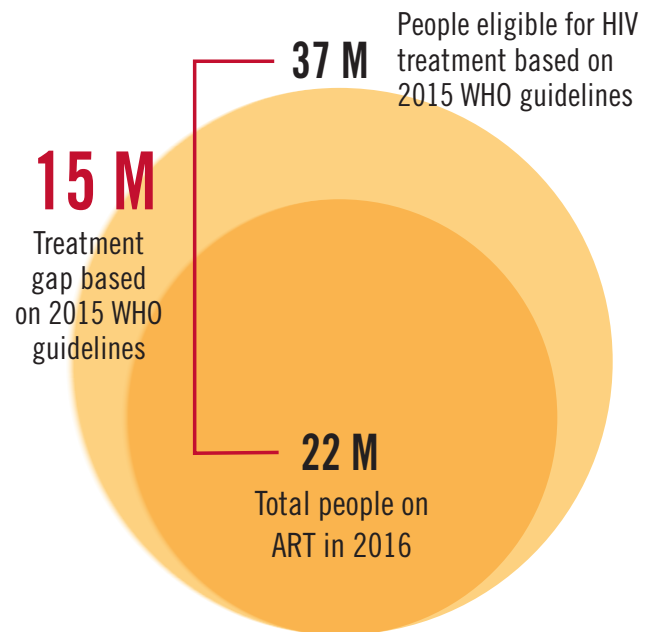
All 37 million people currently living with HIV are eligible for ART based on the 2015 WHO Guidelines for ARVs for treatment and prevention – yet the latest data from July 2018 shows that only 21.7 million of these individuals are currently accessing ART. At the same time, daily antiretroviral regimens are costly and sometimes difficult for patients and most importantly not curative. HIV persists despite even the best treatment, and contributes to the development of non-AIDS morbidity.

As such, it is time to sustain our investments in the search for an HIV cure or remission. Over the last decade, our understanding and knowledge of the mechanisms of HIV persistence and latent viral reservoirs has greatly improved. Many members of the scientific community now agree that the search for a functional cure or remission for HIV/AIDS may be within reach. Indeed, recent years have seen important new developments and continued progress in the areas of cure and remission research:

- The second individual “cured” of HIV through a stem cell transplant and continued advancements in early ART.
- Successful liver transplant from an HIV positive individual to an HIV negative recipient in South Africa.
- Continued advances in understanding the latency continuum that can contribute to developing better latency reversing agents and identify ways to permanently suppress the virus.
- New research into tools to quantify replication-competent virus, specifically the development of the IPDA assay.
- Advances in using CRISPR technology to create HIV immunity in cells and to inactive latent virus.
- Continued progress in understanding how broadly neutralizing antibodies could be used alone, or in combination approaches, to HIV cure.
- Continued discussion and research around the use of analytic treatment interruption in HIV cure clinical trials.
- The advancement of long-acting agents including a new capsid inhibitor and long-acting injectable integrase inhibitor-based therapy.
- Increased advancements in immunomodulators.

To ensure effective future outcomes for cure research, the International AIDS Society’s (IAS) Global Scientific Strategy: Towards an HIV Cure (2016) supports the establishment of an international multi-disciplinary research alliance and global coordination of existing consortia towards an HIV cure.

TREATMENT



It also provides a strategic analysis of the state of research in the area of HIV persistence and eradication in order to develop recommendations for future studies and to promote international and cross-disciplinary research cooperation.

The IAS Global Scientific Strategy: Towards an HIV Cure (2016), identifies the following scientific focal areas:

- Molecular biology of HIV latency and reversal strategies;
- Viral reservoirs, immunology of HIV persistence and ‘kill’ strategies;
- Models for HIV cure or sustainable remission;
- Paediatric HIV cure;
- Gene and cell therapy;
- Novel biomarkers and technologies to quantify and analyse HIV reservoirs;
- Social sciences and health system research.

Increased investments in these areas will aid in the search for an HIV cure, but can also contribute to increased knowledge of HIV pathogenesis and control, advances in the HIV vaccine field and benefit public health globally, such as finding innovative treatments for people with cancer, Alzheimer’s disease, other infectious diseases, and immune disorders.

INVESTMENT IN CURE RESEARCH: 2018 SHOWS SUSTAINED HIV CURE FUNDING

Investment in Cure Research: 2018 shows sustained HIV cure funding

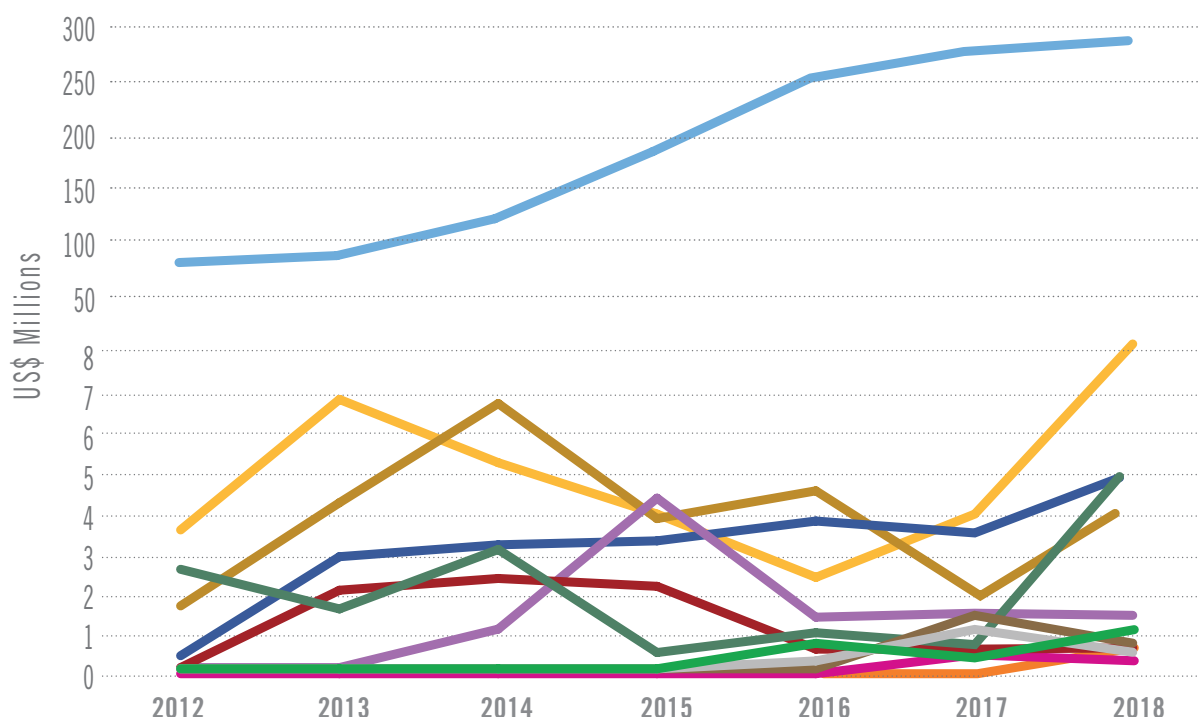
In 2013, the IAS HIV Cure resource tracking group joined forces with AVAC to estimate global investments in HIV cure research. To date, this collaboration has yielded seven years of estimates for cure research investment from 2012 to 2018.

The Working Group estimates that in 2018, US\$323.9 million was invested in cure research, representing a 12% increase over the US\$288.8 million invested in 2017, and an increase of 268% over the US\$88.1 million invested in 2012.

The majority of investments (US\$302.4 million) came from the public sector with US\$19.7 million invested by philanthropies such as Aidsfonds, amfAR, the Bill and Melinda Gates Foundation, CANFAR, Institut Pasteur, Sidaction and Wellcome Trust. Despite outreach by the Working Group, few companies responded to the survey, whilst several companies are known to have active cure research programmes, resulting in a significant underestimation for commercial investment in cure research.

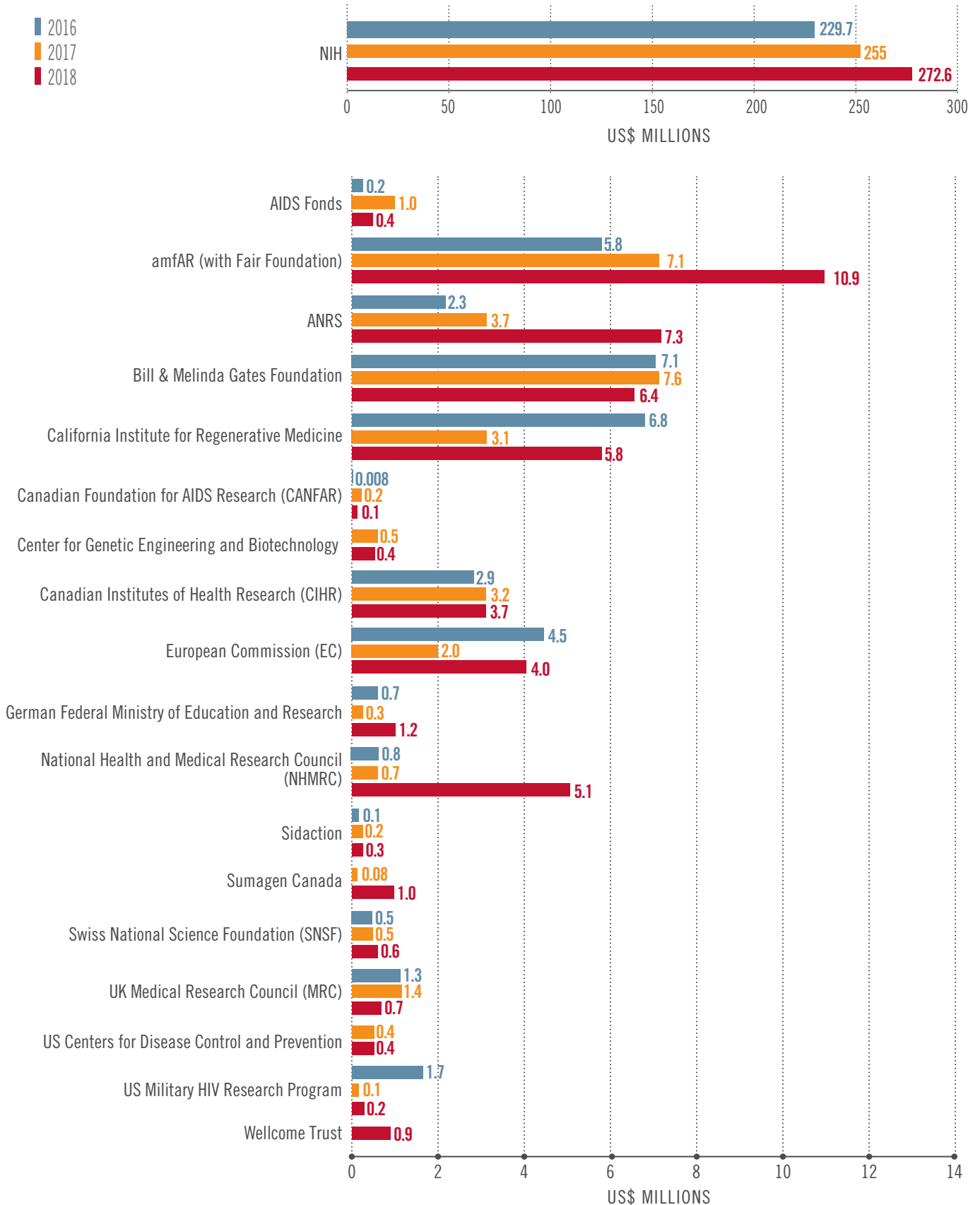
HIV Cure R&D Investments by Country, 2012-2018

	2012	2013	2014	2015	2016	2017	2018
Australia	2.6	1.6	3.1	0.5	1.0	0.7	5.0
Canada	0.4	2.9	3.2	3.3	3.8	3.5	4.9
Cuba	0	0	0	0	0	0.5	0.4
European Commission	1.6	4.2	6.7	3.8	4.5	2.0	4.0
France	3.5	6.8	5.2	3.9	2.3	3.9	8.2
Germany	0	0	0	0	0.7	0.3	1.2
Italy	0	0	0	0	0	1.4	0.5
Spain	0	0	0	0	0	0	0.8
Switzerland	0.03	2.0	2.3	2.1	0.5	0.5	0.6
The Netherlands	0	0	0	0	0.2	1.0	0.4
United Kingdom	0.03	0.03	1.0	4.3	1.3	1.4	1.6
United States	79.4	85.9	120.4	183.2	252.1	273.6	296.0



INVESTMENT IN CURE RESEARCH: 2018 SHOWS SUSTAINED HIV CURE FUNDING

Investments in HIV Cure R&D by Funder, 2016-2018 (US\$ millions)



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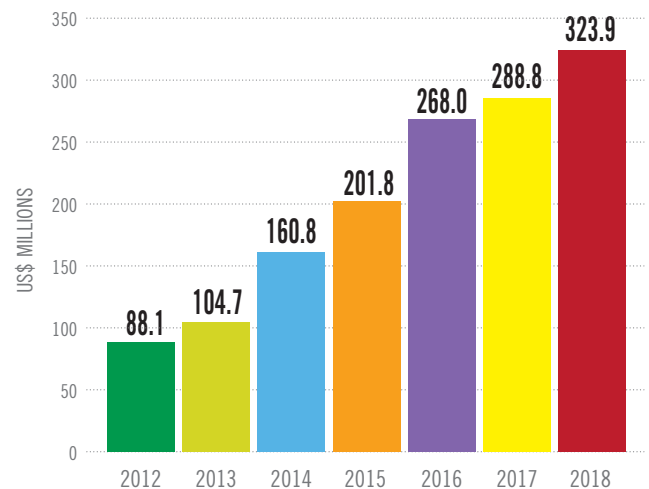
In 2018, the United States through the US National Institutes of Health contributed the majority of public funding, with France, Australia, Canada, the European Commission, the United Kingdom, Germany, Spain, Switzerland, the Netherlands, Italy and Cuba also being contributors to HIV cure research.

The successful implementation of the Global Scientific Strategy plan will require improved international scientific collaborative research teams and institutions at the international level to ensure an optimal use of resources. Active initiatives include:

- **IAS Towards an HIV cure initiative**
The revised IAS Global Scientific Strategy: Towards an HIV Cure 2016, published in Nature Medicine, was launched in Durban at the AIDS 2016 conference.
- **Martin Delaney Collaboratories**
The National Institutes of Health has awarded \$30 million in annual funding among six research collaborations working to advance basic medical science toward an HIV cure.
- **amfAR Countdown to a Cure for AIDS**
amfAR focuses investments aimed at finding the scientific underpinnings of a cure by 2020.
- **NL4Cure**
NL4Cure is a joint partnership coordinated by Aidsfonds between Dutch researchers and stakeholders that are committed to accelerating a cure for HIV. NL4Cure is developing a research agenda prior to identifying funding sources.

Current Research Investment, 2012–2018 (US\$ millions)

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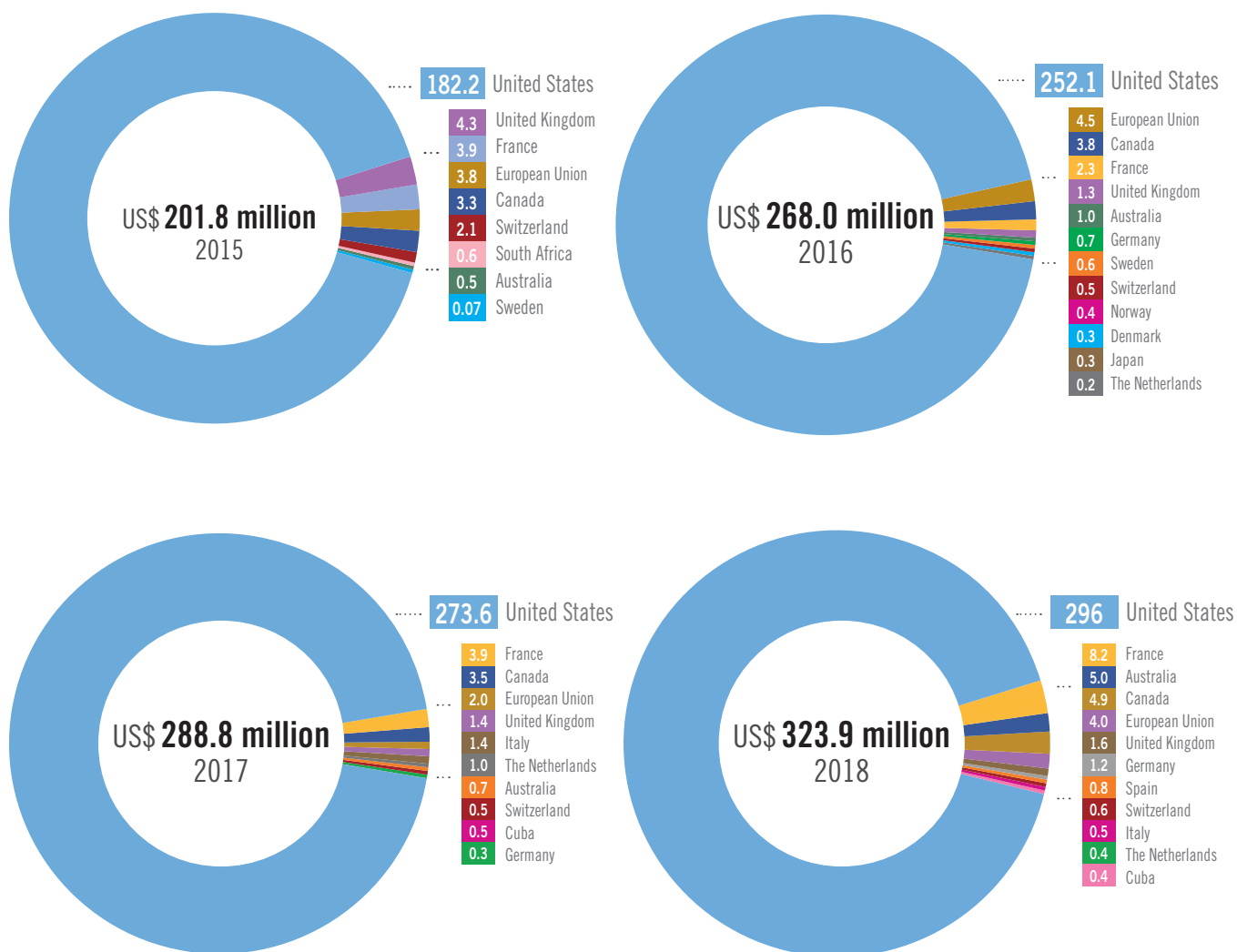
The inclusion of “cure” in the global response should not direct funding away from treatment, prevention and care programmes, or from biomedical research on HIV and its consequences, including vaccine and other prevention research. However, it is imperative that donors, governments and the AIDS community make a viable and sustained economic investment in HIV cure research.

METHODOLOGY

Data collection was undertaken by AVAC on behalf of the Resource Tracking for HIV Prevention R&D accessing public information and collecting information through direct appeals to funding agencies. Requests were made to the public, industry and philanthropic sector funders requesting information on cure research grants awarded in 2018 using the cure definition developed by the US National Institutes of Health’s Office of AIDS Research. In early 2019, surveys were sent to several dozen potential cure research funders across the globe. Responses from funders may not be comparable due to subjective determinations of whether specific grants fall within the OAR definition of cure research. Some funders also decline to provide information, and some did not always provide grant specific detail. In reviewing responses, AVAC accepted funders’ determination that specific research programs or grants are within the OAR definition.

INVESTMENT IN CURE RESEARCH: 2018 SHOWS SUSTAINED HIV CURE FUNDING

Investments in HIV Cure R&D by Country, 2015-2018 (US\$ millions)



ACKNOWLEDGEMENTS

The IAS Towards an HIV Cure initiative would like to thank Resource Tracking for HIV Prevention R&D, for which AVAC acts as Secretariat, and also includes the International AIDS Vaccine Initiative (IAVI) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) as members.