

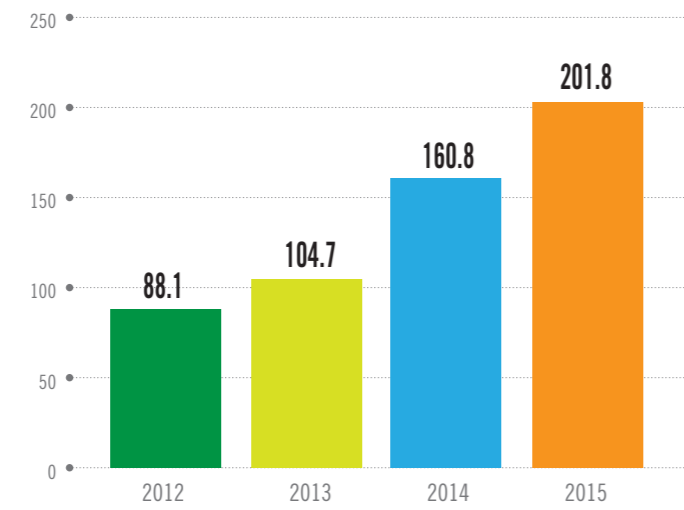
INVESTMENT IN CURE RESEARCH: 2015 SHOWS A CONTINUED POSITIVE TREND FOR HIV CURE FUNDING

In 2015, the United States through the US National Institutes of Health contributed the majority of public funding, with France, the European Union, Canada, Switzerland, United Kingdom, South Africa and Australia also being significant 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**
 At the end of 2014, a new international scientific working group was convened to update and revise the Global Scientific Strategy: Towards an HIV Cure. 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**
 Announcement of newly funded Martin Delaney Collaboratories by the National Institutes of Health.
- amfAR Countdown to a Cure for AIDS**
 amfAR begins investments over six years aimed at finding a broadly applicable cure for HIV by 2020 with partners Qura Therapeutics and University of California, San Francisco
- GSK/UNC HIV Cure Center**
 The University of North Carolina at Chapel Hill, and GSK, announced in 2015 the creation of the dedicated HIV Cure center and a jointly owned new company that will focus on discovering a cure for HIV/AIDS funded by GSK at \$4 million per year for five years.

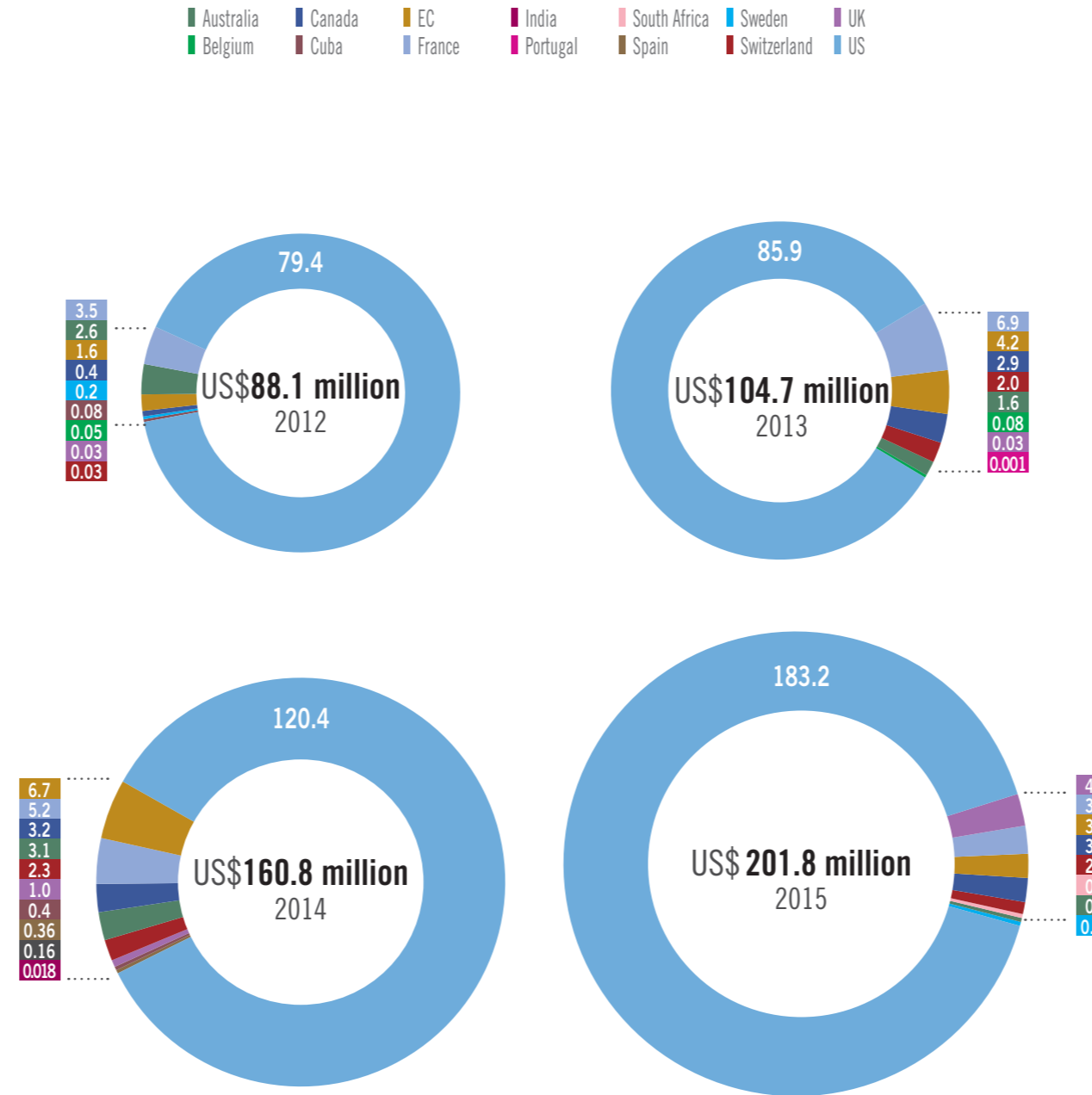
Current Research Investment, 2012–2015 (US\$ millions)



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.

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Investments in HIV Cure R&D by Country, 2013-2015 (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 includes the International AIDS Vaccine Initiative (IAVI) and the Joint United Nations Programme on HIV/AIDS (UNAIDS) as members.

GLOBAL INVESTMENT IN HIV CURE RESEARCH AND DEVELOPMENT IN 2015

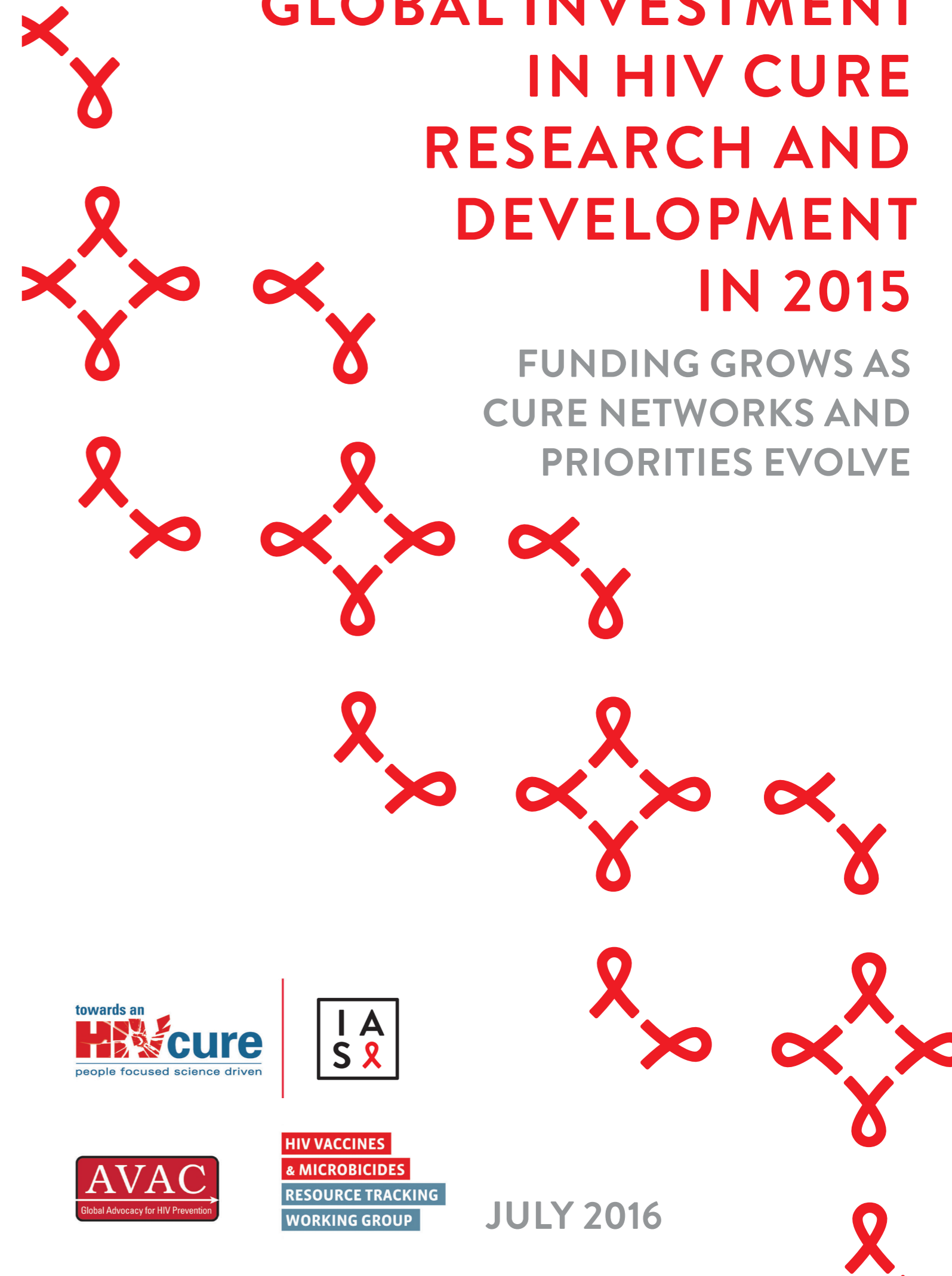
FUNDING GROWS AS CURE NETWORKS AND PRIORITIES EVOLVE

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 2015 using the definition developed by the US National Institutes of Health's Office of AIDS Research. In early 2016, 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' designation that specific research programs or grants are within the OAR definition.



JULY 2016



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.

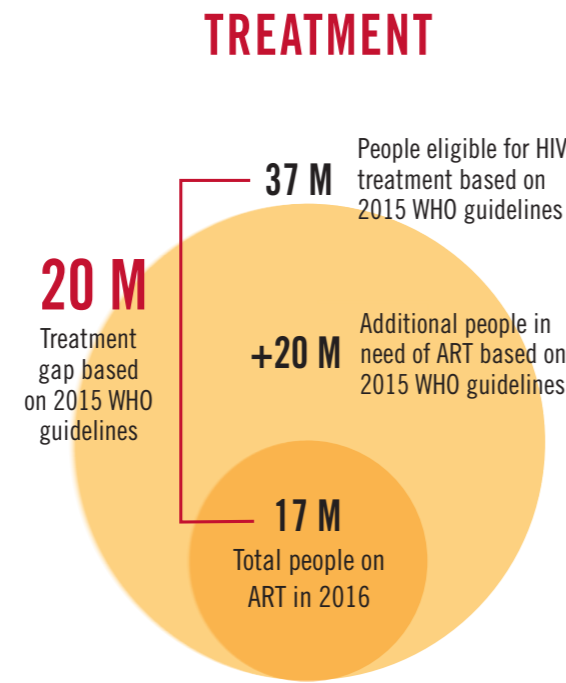
All of 36.7 million people currently living with HIV are now eligible for ART based on the 2015 WHO Guidelines for ARVs for treatment and prevention – unfortunately, the UNAIDS Global AIDS Update from June 2016 shows that only 17 million of these individuals are currently accessing ART. At the same time, 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 strengthen 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, the past year has seen important new developments in the area of cure research:

- Sustained periods of viremia control in the absence of therapy in adults receiving very early initiated ART.
- New tools to quantify replication-competent virus.
- New data on latency reversing agents in clinical trials.
- Ongoing and new studies examine if early HIV suppression by ART is associated with significantly smaller HIV reservoirs and virologic control in adults and infants.
- Results from toll like receptor; TLR7-agonist, show promise in monkey studies in stimulating and eliminating latent virus.
- Advances in using CRISPR technology to create HIV immunity in cells.
- Continued progress in understanding how broadly neutralizing antibodies could be used in combination approaches to HIV cure.
- Advances in understanding how to utilize the innate immune systems of people living with HIV.

Despite these, and other encouraging results, the scientific challenges remain important, as exemplified by the challenges faced by researchers' continued unsuccessful attempts to replicate the results achieved for Timothy Brown, the only documented person to be cured of HIV, using bone marrow or peripheral blood stem cell transplants in other patients.

To ensure effective future outcomes for cure research, the International AIDS Society (IAS) revised its Global Scientific Strategy: Towards an HIV Cure. The 2016 chapter, launched in July 2016, supports the establishment of an international multi-



disciplinary research alliance and global coordination of existing consortia towards an HIV cure. 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, now 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.

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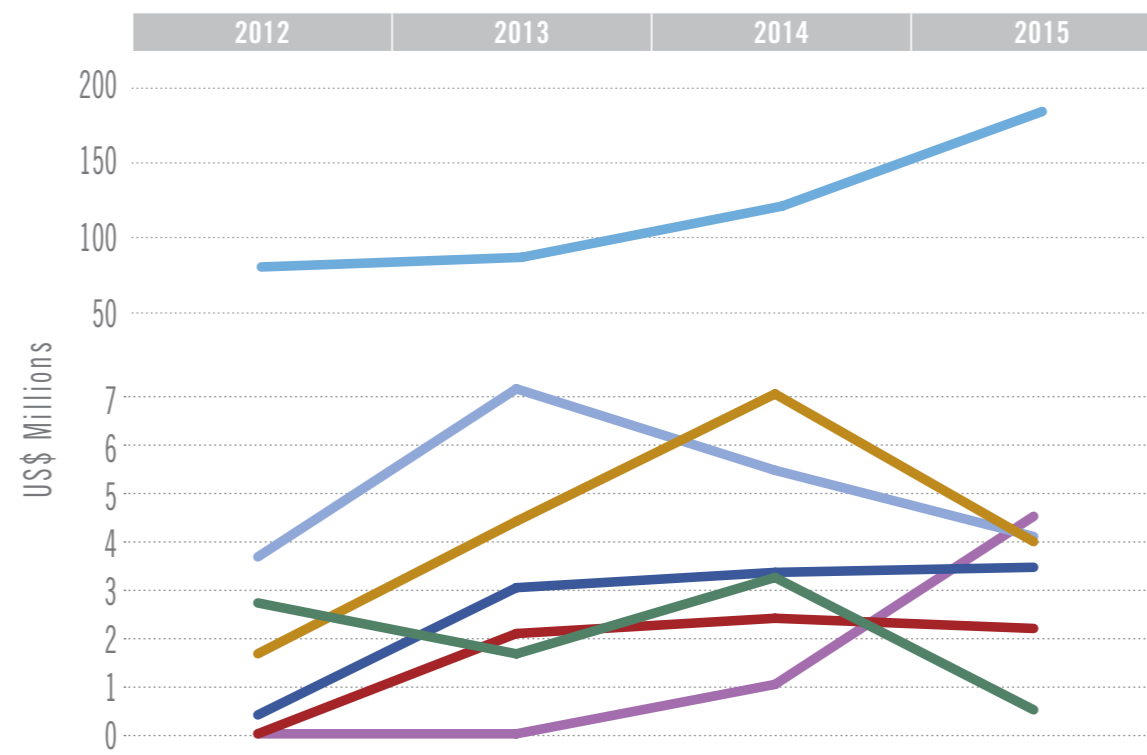
Estimates for global investments more than doubled in past four years.

In 2013, the IAS HIV Cure resource tracking group joined forces with AVAC acting on behalf of the Resource Tracking for HIV Prevention R&D to estimate global investments in HIV cure research. To date, this collaboration has yielded estimates for cure research investment from 2012 to 2015.

The Working Group estimates that in 2015, US\$201.8 million was invested in cure research, representing a substantial increase

of 25% over the US\$160.8 million invested in 2014, and an increase of 129% over the US\$88.1 million invested in 2012. The majority of investments (US\$187.7 million) came from the public sector with US\$14.73 million invested by philanthropies such as amfAR, CANFAR, Fair Foundation, the Bill and Melinda Gates Foundation and Wellcome Trust. Despite outreach by the Working Group this year, only two 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, 2012-2015



	2012	2013	2014	2015
United States	79.4	85.9	120.4	183.2
European Commission	1.6	4.2	6.7	3.8
Canada	0.4	2.9	3.2	3.3
Switzerland	0.03	2.0	2.3	2.1
United Kingdom	0.03	0.03	1.0	4.3
France	3.5	6.8	5.2	3.9
Australia	2.6	1.6	3.1	0.5

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Investments in HIV Cure R&D by Funder, 2013-2015 (US\$ millions)

