The Towards an HIV Cure initiative would like to thank the following organizations for their generous support in 2014.

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Executive Summary

Today, HIV Cure Research has become one the main priorities in the field. Research on viral persistence under antiretroviral therapy and on strategies Towards an HIV Cure is moving fast and generates a great deal of scientific excitement. Many members of the scientific community now agree that the search for a functional cure for HIV/AIDS may be within reach.

In response to the optimism surrounding HIV cure research, the Towards an HIV Cure initiative in 2014 has continued to advocate for the benefits of an HIV cure with the support of topic-specific working groups, focusing primarily on the public health impact and cost-effectiveness of a potential HIV cure, the psychosocial implications of cure research, and opportunities for collaboration and open dialogue between the public and private sector concerning HIV cure research. The initiative continues to develop innovative advocacy tools, and in 2014 the IAS collaborated with the HIV vaccines and microbicides resource tracking working group and AVAC for a second time to report on global investment in HIV cure research and development for the calendar year 2013.

In July 2014, the initiative organized the third edition of the highly regarded annual Towards an HIV Cure Symposium, which took place in Melbourne, Australia. The symposium was co-chaired by Prof. Françoise Barré-Sinoussi, Institut Pasteur and Inserm, France, Prof. Sharon Lewin, University of Melbourne, Australia, and Dr. Steven Deeks, University of California, San Francisco, United States.

The programme has also developed knowledge dissemination and information sharing platforms through community engagement events and satellites in conjunction with regional and international conferences. The Towards an HIV Cure initiative partnered with YRG Care to organize a Community Training Workshop in Chennai, India in January 2014, and collaborated with the National Association of People with HIV Australia (NAPWHA) and Treatment Action Group (TAG) to provide a similar workshop in Melbourne, Australia in July 2014. Similarly, the initiative hosted a joint satellite with the International AIDS Vaccine Initiative (IAVI) to address the synergies and potential collaborations between vaccine and cure research for HIV/AIDS in Cape Town, South Africa in October 2014.

The annual report provides background information on the IAS Towards an HIV Cure initiative and the Stakeholder’s Advisory Board. The report also provides an overview of 2014 activities and events, including the 2014 Towards an HIV Cure Symposium and the associated scholarship programme, community engagement events and other workshops, and the HIV cure research resource tracking project.
Introduction

Scientific research has led to remarkable discoveries since the human immunodeficiency virus (HIV) was first identified more than thirty years ago. Today, individuals living with HIV can expect to live a relatively normal lifespan provided they are both diagnosed and treated early enough and they comply to lifelong antiretroviral treatment. Nevertheless, combination therapy – even when taken for decades – is not curative, as HIV persists despite even the best treatment. Moreover, a cure would allow people living with HIV to be freed of the stigma and discrimination, as well as fear of transmission, that are associated with HIV, which is one major impediment to the well-being of people living with HIV. Today, our understanding of the mechanisms of HIV persistence and latent viral reservoirs has greatly expanded. The scientific community now agrees that it should be possible to at least find a functional cure or remission for HIV/AIDS.

The Towards an HIV Cure initiative, a programme of the International AIDS Society (IAS), aims to facilitate more concerted efforts to advance global scientific research, to demonstrate leadership in advocating for increased investment in HIV cure research and to ensure that the broad international scientific community is fairly represented and involved in this effort.

The Towards an HIV Cure initiative was launched in November 2011 as one of the key focus areas of the International AIDS Society. The initiative is guided by the Stakeholder’s Advisory Board, whose mission is to ensure that key partners, including major institutions, funders and advocates of HIV cure research, are engaged and informed throughout the process. The Advisory Board is co-chaired by Professor Françoise Barré-Sinoussi, Director of the Regulation of Retroviral Infections Division at the Institut Pasteur, France and by Dr. Jack Whitescarver, NIH Associate director for AIDS Research and Director of the Office of AIDS Research (National Institutes of Health), United States.

Following the IAS-cohosted workshop on HIV Reservoirs in conjunction with AIDS 2010, there has been a resurgence of interest and optimism on prospects of a cure for HIV. Building on the momentum, IAS moved to guide the development of a Global Scientific Strategy, Towards on HIV Cure, in conjunction with over 30 leading scientists and with support and leadership from the National Institutes of Health (NIH), the French National Agency for Research on AIDS and Viral Hepatitis (ANRS), Sidaction, and the Treatment Action Group (TAG). The Global Scientific Strategy was launched at the 2012 Towards an HIV Cure Symposium, held in conjunction with AIDS 2012. The publication of the Global Scientific Strategy Towards an HIV Cure in Nature Reviews Immunology received strong positive scientific feedback from peers and extensive media coverage, and has since become a key reference document in HIV cure research.

In 2014, a second International Scientific Working Group was formed to revise and update the Global Scientific Strategy in line with the current research directions and new knowledge learned. The updated Global Scientific Strategy will be launched in July 2016, in conjunction with the 21st International AIDS Conference, AIDS 2016, in Durban, South Africa.

Following the seminal work of the International Scientific Working Group in the establishment of the Global Scientific Strategy, the IAS has facilitated the creation of a number of smaller topic-specific working groups. These working groups bring together leading scientists and community members on relevant topics, including ethics, psychosocial studies, public health and cost-effectiveness.

Moreover the IAS has also mediated the creation of an Industry Collaboration Group with the aim to bring together industry partners and cure researchers to facilitate and encourage interactions and collaborations between the public and private sectors.

The Towards an HIV Cure Symposium has become an annual event, attracting over 300 high-level participants worldwide and providing a unique setting for the presentation and discussion of the latest research on HIV cure across a variety of disciplines. The 2014 Edition was held in July 2014, in conjunction with the AIDS 2014 Conference in Melbourne, Australia.

Mission and Goals

- Facilitate scientific discussion, exchange and collaboration to promote and accelerate research towards a cure or remission for HIV
- Provide leadership in advocating for increased investment and resource optimization in HIV cure research
- Provide clear and accurate information and disseminate knowledge in the broader community

Towards an HIV Cure Research Priority Areas

- Cellular and viral mechanisms that maintain HIV Persistence
- Tissue and cellular sources of persistent SIV/HIV in animal models and long term ART-treated individuals
- Immune activation and dysfunction in the presence of ART
- Natural models of HIV/SIV control
- Assays to measure persistent infection
- Therapeutic and immunological approaches for eliminating persistent HIV infection
- Enhancement of immune response to control viral replication

The 2014 Edition was held in July 2014, in conjunction with the AIDS 2014 Conference in Melbourne, Australia.
The Towards an HIV Cure initiative is guided by the Stakeholder's Advisory Board, whose mission is to ensure that key partners, including major institutions, funders and advocates of HIV cure research, are engaged and informed throughout the process.

Members of the IAS Towards an HIV Cure Stakeholder Advisory Board

Françoise Barré-Sinoussi  Institut Pasteur & Inserm  France
Serawit Bruce Landas  Sidaction  France
Nikos Dedes  EATG & ITPC  Global
Jean-François Delfraissy  ANRS  France
Carl Dieffenbach  NIAD, NIH  USA
Peter Godfrey-Faussett  UNAIDS  Switzerland
Mark Harrington  TAG  USA
Gottfried Hirnschall  WHO  Switzerland
Rowena Johnston  amFAR  USA
Gudrun Leedts  Department of Science & Technology  South Africa
Clive Morris  NHRI  Australia
Paula Munderi  MRC/UVRI  Uganda
Marc Ouellette  CIHR  Canada
Subhasree Sai Rayghavan  SAATHII  India
Yiming Shao  CDC – China  China
Mitchell Warren  AVAC  USA
Jack Whitescarver  NIH-OAR  USA
Chris Wilson  Bill & Melinda Gates Foundation  USA

The Advisory Board is co-chaired by Professor Françoise Barré-Sinoussi, Director of the Regulation of Retroviral Infections Division at the Institut Pasteur, France and by Dr. Jack Whitescarver, NIH Associate director for AIDS Research and Director of the Office of AIDS Research (National Institutes of Health), United States.

The mission of the Industry Collaboration Group (ICG) is to accelerate scientifically promising, ethical HIV Cure research, with a particular emphasis on the role and responsibilities of industry and facilitating collaboration between the private and public sectors. The group in 2014 has been focused on facilitating the development of a common Material Transfer Agreement for both pharmaceutical companies and academic institutions, with regards to the provision of antiretroviral agents (ARVs) for preclinical HIV cure research.

In addition to these existing groups, a working group on Ethics published a peer-reviewed article on the Ethical considerations of HIV cure research*. Following the publication of this review, the group as such was dissolved and the topic of Ethics was integrated into all the HIV cure groups.

The IAS has facilitated the creation of a number of topic-specific working groups which bring together leading scientists and community members to focus on topics pertinent to HIV Cure research.

The Working Group on Public Health Impact and Cost-Effectiveness was established to respond to the need for a more in-depth consideration of cost-effectiveness in the IAS Global Scientific Strategy on HIV Cure.

The Psychosocial Studies Group is developing a multi-country dialogue and collaboration to assess the willingness of patients’ to participate in HIV Cure-related clinical strategies and the potential impact of an HIV Cure from a social and behavioural sciences perspective. This international group includes members from Australia, China, France, the Netherlands, United Kingdom and the United States.

The Working Group on Public Health Impact and Cost-Effectiveness has joined forces with the Psychosocial Studies Group to prepare an opinion article which sets a research agenda and raises important questions for HIV cure research, beyond biomedical research, which will be used as an advocacy tool for media, funders and the general public.

Towards an HIV Cure Working Group Meetings in 2014

- Working Group on Public Health Impact and Cost-Effectiveness Meeting, 4 March 2014, Boston, USA
- Industry Collaboration Group Meeting, 5 March 2014, Boston, USA
- Industry Collaboration Group Meeting, 23 July 2014, Melbourne, Australia

Following the success of previous editions (Washington 2012 and Kuala Lumpur 2013), the IAS and the Towards an HIV Cure Stakeholder’s Advisory Board organized the third annual Towards an HIV Cure Symposium in Melbourne, Australia on 19-20 July 2014.

The 2014 symposium provided an interactive and informative meeting for approximately 300 senior, mid-career and junior scientists, clinical researchers, scientific journalists, research funding administrators and community representatives from around the world. The two-day meeting was hosted by the International AIDS Society (IAS) with the support of the National Institutes of Health, Office of AIDS Research (NIH-OAR), the French National Agency for Research on AIDS and Viral Hepatitis (ANRS), the Government of Victoria, Sanofi and MSD.

Towards an HIV Cure symposium chairs:
- Prof. Françoise Barré-Sinoussi, Institut Pasteur and Inserm, France
- Dr. Steven Deeks, University of California, San Francisco, United States
- Prof. Sharon Lewin, University of Melbourne, Australia

The Symposium programme presented new scientific evidence and offered opportunities for strategy building and structured dialogue on the scientific priority areas outlined in the Global Scientific Strategy. Structured around abstract driven sessions, poster exhibition sessions and roundtable discussions, the symposium showcased the latest and most promising scientific research. Non-HIV experts were also invited to provide a new perspective for HIV cure research in the opening and closing keynote presentations.

Scholarship Programme
The symposium encourages and facilitates the participation of young researchers and community representatives globally through the scholarship programme, which enabled over 40 outstanding candidates to travel to Melbourne to attend both the 2014 symposium and the AIDS 2014 conference.

Breakdown of scholarships awarded, by geographical distribution:
- Africa: 31.71%
- Europe: 17.07%
- USA & Canada: 31.71%
- Asia & the Pacific Islands: 19.51%

IAS-ANRS HIV Cure Prize
The IAS-ANRS Prize on HIV Cure was awarded at the Towards an HIV Cure Symposium. The US$2,000 IAS-ANRS Young Investigator Award supports young researchers who demonstrate innovation, originality, rationale and quality in the field of HIV/AIDS research. The 2014 Prize was awarded by Prof. Jean-François Delfraissy (ANRS Director) and Mr. Owen Ryan (IAS Executive Director) to Mr. Gilles Darcis, Service of Molecular Virology, Institut de Biologie et de Médecine Moléculaires (IBMM) and Université Libre de Bruxelles (ULB), Belgium.
Invited Speakers

The programme committee selected a number of invited speakers to present at the symposium:

Opening Lecture:
Jeffrey Lifson, Frederick National Laboratory for Cancer Research, United States
The Role of Therapeutic Vaccination in HIV Cure Strategies

Closing Lecture:
Miles Prince, Peter MacCallum Cancer Centre, Australia
Targeting Chromatin Remodeling as a Treatment for Haematological Malignancies – Lessons we can learn for the Treatment of Latent HIV

Oral Abstract Sessions:
Geoffrey Hill, Queensland Institute of Medical Research, Australia
Allogeneic Stem Cell Transplantation, Graft-versus-Host Disease and the Elimination of HIV

Melanie Ott, Gladstone Institutes and University of California, San Francisco, United States
Epigenetic Regulation of HIV Latency

Dan Barouch, Beth Israel Deaconess Medical Center and Ragon Institute of MGH, MIT, and Harvard, United States
Therapeutic Efficacy of Neutralizing Antibodies for HIV

Christine Rouzioux, Université Paris Descartes, France
Impact of Antiretroviral Treatment on HIV Reservoirs

Roundtable discussion: Analytical Treatment Interruption in HIV Cure Research
Judith Auerbach, University of California, San Francisco, United States
Guglielmo Barbet, European AIDS Treatment Group, Italy
Daniel Kuritzkes, Brigham and Women’s Hospital, Harvard Medical School, United States
Lars Østergaard, Aarhus University Hospital, Denmark
Jeremy Sugarman, Johns Hopkins Berman Institute of Bioethics, United States

Roundtable discussion: Preparedness for HIV Cure in Resource-Limited Settings
Jintanat Ananworanich, United States
Robert Murphy, Northwestern University, United States
Mathurin Tejiokem, Pasteur Centre of Cameroon, Cameroon
Joseph Tucker, University of North Carolina Project-China, China

Roundtable discussion: Public and Private Partnerships in HIV Cure Research
David Kaslow, PATH, United States
Joseph Mike McCune, University of California, San Francisco, United States

Photo credits (left to right)
Dr. Melanie Ott, invited speaker for abstract session ‘Epigenetic Regulation of HIV Latency’
Mr. Moses Supercharger Nsubuga asking questions during the roundtable discussion
Dr. Jeffrey Lifson delivers the opening lecture at the 2014 Symposium

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In 2013, the IAS HIV Cure resource tracking group joined forces with the HIV Vaccines and Microbicides Resource Tracking Working Group to estimate global investments in HIV cure research. To date, this collaboration has yielded estimates for investment in 2012 and 2013.

The Working Group estimates that in 2013, US$102.7 million were invested in cure research, an increase of 16% over the US$88.1 million invested in 2012. The majority of investments (US$98.5 million) came from the public sector with US$4.2 million invested by philanthropies such as Aides Fonds, amfAR, the Campbell Foundation and Sidaction. Despite outreach by the Working Group this year, industry did not reply to the survey, as such this estimate undercounts commercial investment in cure research.

In 2013, the United States (US), through the US National Institutes of Health contributed the majority of public funding, with France, the European Union, Australia and Canada also being significant contributors to HIV cure research. US investment is expected to increase in future years after President Obama announced in 2013 that $100 million of funding for the NIH would be reprioritized to enhance HIV cure research.

In 2012, the non-US countries invested 11% of global HIV cure research funding, while in 2013, it is noted that the rest of the world increased proportionally their investment up to 16% of global HIV cure research funding, suggesting encouragingly that HIV cure research investment is expanding and non-US countries are increasing their funding.

The successful implementation of the Global Scientific Strategy plan will require improved scientific collaborative research teams and institutions at the international level to ensure an optimal use of resources. Encouragingly, there is investment in several international collaborations such as the Collaborative HIV Eradication of Viral Reservoirs (CHERUB) in the UK, the amfAR Research Consortium on HIV Eradication (ARCH), the IAS/ANRS Young Investigator Award Program and the Martin Delaney Collaboratories.

The IAS Towards an HIV Cure initiative and AVAC stress that under no circumstance should the inclusion of “cure” in the global response 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 economic investment in HIV cure research, and right now.

In collaboration with AVAC.

Investments in HIV Cure Research by Funder

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<thead>
<tr>
<th>Funder</th>
<th>Investment 2013</th>
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<tr>
<td>Aides Fonds</td>
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In July 2014, the IAS collaborated with Treatment Action Group (TAG) and the National Association of People Living with HIV Australia (NAPWHA) to provide a similar workshop in conjunction with the annual Towards an HIV Cure Symposium. The Community Engagement Satellite provided the key elements to understand the challenges and obstacles for an HIV cure, to present the most recent results and the current research directions, as well as engaging a cross-community dialogue.
The most recent breakthroughs highlighted how approaches to prevent infection and to control viral replication and transmission are closely associated. New insights into the induction and role of broadly neutralizing antibodies, T-cell responses and immune-based therapies are proving crucial in both vaccine and cure research.

To this end, the International AIDS Society (IAS) Towards an HIV Cure initiative and the International AIDS Vaccine Initiative (IAVI) hosted a joint satellite session during the HIV R4P Conference in Cape Town, South Africa in October 2014.

The satellite session enhanced the understanding and collaboration between vaccine and cure researchers, improved understanding of synergies, potential and perspectives, and increased dialogue with advocates, communities, policy makers, public health experts and funders, with an aim to:

- Accelerate research for both vaccines and immune-based interventions to control viral replication;
- Strengthen the case for sustained political and financial commitment to innovation and research of new approaches;
- Advance the thinking and dialogue on future directions and priorities in research, as well as frameworks and mechanisms for facilitating and supporting more collaborative research;
- Bring the science closer to the affected communities and ensure that future innovation is accessible to and acceptable for those who need it most.

Due in large part to the efforts of the IAS, a true international collaborative spirit surrounding cure research is emerging. I am optimistic these collaborations will result in rapid advances over the next several years.

Steven Deeks
2014 Symposium Co-Chair, USA

A key priority now for an HIV cure is to convey both the promise and the timelines—preparing advocates for active engagement as well as delays, and fitting the search for a cure into the broader landscape of a comprehensive response to the epidemic.

Mitchell Warren
Advisory Board Member, USA

Science is now telling us that a remission of HIV infection allowing patients to live free from antiretroviral drugs should be achievable. The closer we will work together, the faster we will reach that goal. This is the spirit of the Towards an HIV Cure Initiative.

Françoise Barré-Sinoussi
Advisory Board Co-Chair, France

Finding a cure for HIV must be a major scientific priority. I am optimistic that if we apply the principals of collaboration, innovation and advocacy that have been so effective in the discovery of antiviral therapy, we can one day achieve a scalable cure for all.

Sharon Lewin
2014 Symposium Co-Chair, Australia

My patients have often said: “by the grace of God, we will stay alive until a cure for HIV is found.” Their courage should be matched by conviction. The HIV Cure Research Strategy represents for me an exciting roadmap envisioned by the best scientists in the field.

Paula Munderi
Advisory Board Member, Uganda

A key priority now for an HIV cure is to convey both the promise and the timelines—preparing advocates for active engagement as well as delays, and fitting the search for a cure into the broader landscape of a comprehensive response to the epidemic.

Mitchell Warren
Advisory Board Member, USA

The IAS plays a significant leadership role in bringing together the global HIV community. The Towards an HIV Cure Initiative is guiding cure research globally and has people working together more than ever towards a world without HIV and AIDS.

Marc Ouellette
Advisory Board Member, Canada