Press Release

Decision of the Laureates of
the Fourth Hideyo Noguchi Africa Prize

August 3, 2022
Cabinet Office

The Government of Japan has decided to award the Fourth Hideyo Noguchi Africa Prize to Drs. Salim S. Abdool Karim and Quarraisha Abdool Karim (RSA) for Medical Research Category, and Guinea Worm Eradication Program for Medical Services Category (The Carter Center in partnership with all stakeholders in Africa).

Medical Research Category
Dr. Salim S. Abdool Karim and Dr. Quarraisha Abdool Karim (Republic of South Africa (RSA))

Salim S. Abdool Karim (RSA)

Born in the Republic of South Africa in 1960. Obtained M.B.Ch.B., M.Med. and Ph.D. (Medicine) at the University of Natal, South Africa. Current Director, Center for the AIDS Programme of Research in South Africa (CAPRISA) and CAPRISA Professor of Global Health at the Mailman School of Public Health, Columbia University, New York. He is the Pro Vice-Chancellor (Research) at the University of KwaZulu-Natal in South Africa. *(Photo credit: Matthew Henning)*

Quarraisha Abdool Karim (RSA)

Born in the Republic of South Africa in 1960. Obtained M.Sc. at Columbia University, New York and Ph.D. (Medicine) at the University of Natal, South Africa. Current Associate Scientific Director of CAPRISA, Professor of Epidemiology at the Mailman School of Public Health, Columbia University, New York and Pro Vice-Chancellor (African Health), University of KwaZulu-Natal in South Africa. *(Photo credit: Rajesh Jantilal)*

The Fourth Hideyo Noguchi Africa Prize for Medical Research goes to Dr. Salim S. Abdool Karim and Dr. Quarraisha Abdool Karim for their global contributions to HIV/AIDS prevention and treatment through scientifically rigorous research, for their role in training African scientists and for their steadfast scientific leadership in the response to Covid-19 in Africa.

Drs. Salim S. Abdool Karim and Quarraisha Abdool Karim of CAPRISA, Columbia University, New York and the University of KwaZulu-Natal, Republic of South Africa, deserve to be awarded the Fourth Hideyo Noguchi Africa Prize for medical research category for their ground-breaking research and scientific leadership in Africa over more than 3 decades. During this period, the Abdool Karims have worked side-by-side as spouse-scientists tackling devastating diseases while overcoming scientific and political obstacles. In their many achievements they embody the spirit of Hideyo Noguchi. At considerable professional risk, they confronted AIDS denial, provided life-sparing antiviral treatments in defiance of government policy and developed HIV prevention approaches that empower women to protect themselves. They established collaborative HIV research centers, working with international partners on vaccines, immunopathogenesis research, microbicides and antiviral treatments.

They have continued their scientifically rigorous work in the SARS-CoV-2 pandemic, undertaking rapid surveillance, promoting evidence-based prevention and combatting misinformation on Covid-19 vaccines. In tracking the epidemiology of SARS-CoV-2, the Abdool Karims deciphered the periodicity in Covid-19 surges, providing accurate estimations of likely future surges of the coronavirus and assisting Africa to be better prepared for pandemic pressure on its healthcare systems, economies, and social systems. The Abdool Karims played a key role in the national response against Covid-19 in the Republic of South Africa, with Salim serving as Chair and Quarraisha as a member of the government's Ministerial Advisory Committee on Covid-19.

Summary of Achievements

Drs. Salim and Quarraisha Abdool Karim began their journey as South African infectious diseases epidemiologists when they undertook one of the first community-based studies of HIV in Africa in 1990, demonstrating the disproportionate burden of HIV in young women. This work in rural Africa laid the bedrock for the decades of research that would follow to develop interventions for this vulnerable population.

In 2002, the Abdool Karims jointly founded CAPRISA, a non-profit research institute specializing in AIDS, with its headquarters at the Nelson Mandela Medical School in Durban, South Africa. From humble beginnings, CAPRISA has become one of Africa's most eminent research institutes, playing an important role in providing scientific advice that impacts government policies across the world. They have made the following three particularly significant contributions:

1. Improving HIV prevention in Africa

Epidemiological and phylogenetic studies conducted by the Abdool Karims revealed the "*Cycle of HIV Transmission*" in Africa where young African women have the highest rates of HIV infection due to relationships with men about 10 years older than them. These findings laid the foundations for the UNAIDS report, *"Life Cycle approach to HIV"*, and have been adopted by several African countries to guide their national HIV prevention programs. Their most important contribution was their 2010 finding, through rigorous clinical trials at CAPRISA, of the effectiveness of a vaginal gel containing an antiviral agent in lowering the risk of HIV infection among young African women. This finding was heralded by UNAIDS and WHO as being amongst the most significant scientific breakthroughs in the fight against AIDS and ranked among "The Top 10 Scientific Breakthroughs of 2010" by the journal, Science.

2. Saving lives through improving treatment of HIV and tuberculosis co-infection

Tuberculosis is the most common opportunistic disease in AIDS patients in Africa and a leading cause of death on the continent. The Abdool Karims led clinical trials at CAPRISA that showed that the early deployment of antiretroviral therapy dramatically reduced deaths in patients with both HIV and tuberculosis. These findings were adopted in the WHO treatment guidelines and implemented in most countries.

3. *Providing scientific leadership in the Covid-19 response*

The Abdool Karims have tirelessly championed the importance of science in defining the Covid-19 response in Africa. Dr. Salim Abdool Karim served as the inaugural Chair and Dr. Quarraisha Abdool Karim as a member of the South African government's Ministerial Advisory Committee for Covid-19. He is also a Commissioner on the Lancet Commission on Covid-19 and the African Union's Commission on Covid-19. Dr. Quarraisha Abdool Karim is a member of the Executive Group of the World Health Organization's Covid-19 treatment and vaccine Solidarity trials.

In addition to the three accomplishments above, they led the Fogarty International Center's Columbia University HIV training and research program for more than 20 years, providing training for over 600 African researchers.

Both Abdool Karims are members of the US National Academy of Medicine, The World Academy of Science, African Academy of Sciences, Academy of Science in South Africa and the Royal Society of South Africa. In addition, Dr. Salim S. Abdool Karim is a Fellow of The Royal Society of the U.K. and is the first African scientist to be appointed on the Editorial Board of the New England Journal of Medicine. The Abdool Karims have served as science advisors of the WHO, UNAIDS, PEPFAR, The Global Fund to Fight AIDS, Tuberculosis and Malaria, and the Bill & Melinda Gates Foundation.

In summary, Drs. Salim and Quarraisha Abdool Karim are world renowned African scientists who have had a marked impact on HIV prevention and treatment as well as the Covid-19 response globally and especially in Africa.

Professors Salim and Quarraisha Abdool Karim at the CAPRISA headquarters located on the Nelson Mandela Medical School campus. (Credit: Matthew Henning)

Professors Salim and Quarraisha Abdool Karim in the CAPRISA main laboratory. (Credit: Matthew Henning)

Professors Salim and Quarraisha Abdool Karim at the CAPRISA eThekwinin Research clinic speaking to a study participant (Credit: Dean Demos)

Point of contact to the prize laureate

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Medical Services Category
Guinea Worm Eradication Program

A global campaign, led by The Carter Center in partnership with stakeholders in Africa, to eradicate the second human disease in history.

Displacement by war and nomadic lifestyles in South Sudan make pipe filters – distributed to men, women, and children – an important tool against contracting Guinea worm disease.
Kuse Dam, Terekeka County, South Sudan (Photo Credit: The Carter Center / L. Gubb)

The Fourth Hideyo Noguchi Africa Prize for Medical Services goes to the Guinea Worm Eradication Program for the near eradication of Guinea worm disease, led by The Carter Center and carried out in partnership with ministries of health in Africa, communities, nongovernmental organizations, and key partners like the World Health Organization (WHO) and the U.S. Centers for Disease Control and Prevention (CDC).

The Guinea Worm Eradication Program deserves to be awarded the Fourth Hideyo Noguchi Africa Prize in the Medical Services category. The Carter Center began leading the global campaign in 1986, and, today, together with partners, works to erase the scourge of this debilitating disease. The parasitic disease is spread by consuming contaminated drinking water and can be tackled with community education, water filtration and, in cases of existing infection, proper treatment. There is no vaccine or drug to treat or prevent Guinea worm disease, only behavior modification and building trust at the community level. But achieving eradication continues to require reaching remote locations, tackling conflict zones, and reinforcing a vast infrastructure of local public health and sanitation workers across the African continent. It was a bold idea in the 1980s to target Guinea worm disease for eradication, but not a simple one. It would require ongoing funding and decades of commitment. By 2021 the burden of Guinea worm disease had fallen from an estimated 3.5 million cases annually to a mere 15 – with more than 80 million human cases averted. Yet, access to safe water in these remaining and at risk communities continues to remain paramount, especially as animal transmission has been identified in targeted areas. The HNAP Committee congratulates The Carter Center and all the stakeholders who have been involved in the Guinea Worm Eradication Program at communal, regional, national, and international levels for its extraordinary

achievements and the near eradication of the second human disease. Together we will remain tenaciously vigilant to ensure that this ancient disease is relegated to the history books.

Summary of Achievements

Working closely with ministries of health and local communities in Africa and Asia, the Guinea Worm Eradication Program, a global coalition led by The Carter Center, has reduced cases by more than 99.99% from approximately 3.5 million in 1986 to just 15, all in Africa, in 2021.

The presence of Guinea worm disease in an area usually indicates abject poverty, including lack of safe drinking water. Guinea worm disease, or dracunculiasis, is a water-borne parasitic disease that causes tremendous suffering yet is completely preventable. Emerging worms can incapacitate people and their families for weeks, even months. Guinea worm disease is contracted when water contaminated with tiny water fleas that harbor Guinea worm (*Dracunculus medinensis*) larvae is consumed. About a year after ingestion, a mature Guinea worm creates an agonizingly painful lesion and slowly emerges from the body through the skin. Infected persons may try to seek relief from the burning pain and immerse the lesion in water, which allows the worm to release its larvae into the water and begin the disease cycle all over again.

In 1986, an estimated 3.5 million Guinea worm disease cases occurred annually in 19 countries in Africa and two in Asia, and some 120 million people were at risk of infection. The ancient disease is being eliminated through community-based interventions to educate people to change their behavior to interrupt the transmission. In each country, the national program is implemented by the ministry of health in partnership with national and local political leaders, nongovernmental organizations, as well as traditional leaders and community-based village volunteers. Filters are provided and people are taught to filter all drinking water, and volunteers are trained to teach prevention practices to their communities, recognize the signs of an emerging Guinea worm, and provide free treatment. Cash rewards are paid so that suspected cases are quickly reported and can be contained.

As a result of these continuing efforts by the Guinea Worm Eradication Program, today the disease persists only in the most complex and remote locations in a handful of countries in Africa. According to The Carter Center, the total human case count from 1 January to 31 December 2021 was only 15. This impressive result opens the possibility

of Guinea worm becoming the first parasite, and the second human disease (after smallpox) to be eradicated in history.

Community-based village volunteers are the frontline heroes of the Guinea Worm Eradication campaign and their dedication and commitment are responsible for the progress: 99.99% eliminated worldwide. Molujore village, Terekeka County, South Sudan
(Photo credit: The Carter Center/L. Gubb)

Carter Center technical advisor Laurès Dossou (foreground) and volunteer supervisor Mende Kelmane Alphonso instruct a crowd on how to detect Guinea worm disease during a cash rewards ceremony in Dangabol Village, Chad. People who report suspected Guinea worm infections and take appropriate measures can receive rewards of up to $100.
(Photo Credit: The Carter Center / J. Hahn)

Community health workers, Regina Natube, Morris Abure and Lokore Arkangelo of the Guineaworm Eradication programme talk to villagers in Akoruni village about the cash reward initiative, Republic of South Sudan (Photo Credit: The Carter Center/C. Marin)
https://www.cartercenter.org/news/features/h/guinea_worm/meet-regina-lotubai-lomare-lochilangole.html

Point of contact to the prize laureate

Carter Center Point of Contact:
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Brief Personal Records of
Drs. Salim S. Abdool Karim and Quarraisha Abdool Karim

1. Dr. Salim S. Abdool Karim

[Date of birth]

July 29th, 1960 (in the Republic of South Africa)

[Education and Research Career]

1983	MBChB, University of Natal, South Africa.
1984	Internship, King Edward VIII Hospital Durban.
1985	Post-Intern Research Fellow, Research Institute for Diseases in Tropical Environment of the South African Medical Research Council.
1986 - 1987	Resident/Registrar, Department of Virology, Faculty of Medicine, University of Natal.
1987 - 1988	Post-doctoral Fellow, Gertrude H. Sergievsky Center, Columbia University, New York.
1988	MS (Epidemiology), School of Public Health, Columbia University, New York.
1989	Diploma in Datametrics (Computer Science), University of South Africa.
1989 - 1992	Resident/Registrar, Department of Community Health, Faculty of Medicine, Natal University
1991	FFCH (Community Medicine), College of Medicine, South Africa.
1992	MMed (Community Health), University of Natal, South Africa.
1992 - 1993	Senior Epidemiologist, South African Medical Research Council.
1992 - 1995	Part-time Senior Lecturer, Department of Optometry, University of Durban-Westville.
1994	Visiting Professor, Division of Epidemiology, School of Public Health, Columbia University.
1993 - 2000	Director, CERSA: Centre for Epidemiological Research in South Africa, Medical Research Council (MRC).
1996 - 2000	Adjunct Associate Professor, Division of Epidemiology, Mailman School of Public Health, Columbia University, New York.
1997	Interim Director, Africa Centre for Population Studies and Reproductive Health of the Wellcome Trust

1998 - 2000	Visiting Professor, Weill Medical College, Cornell University, New York.
1999	PhD, University of Natal, South Africa
2000 - 2001	Director, HIV Prevention and Vaccine Research Unit, Medical Research Council.
2000 - 2015	Professor of Clinical Epidemiology, Mailman School of Public Health, Columbia University, New York
2001 - 2004	Deputy Vice-Chancellor (Research), University of Natal
2003 - 2006	Honorary Professor in Community Health, Nelson R. Mandela School of Medicine, University of KwaZulu-Natal
2007 - 2008	Interim Director, KwaZulu-Natal Research Institute for TB and HIV (K-RITH) of the Howard Hughes Medical Institute
2008 - 2011	Honorary Professor in Public Health, Nelson R. Mandela School of Medicine, University of KwaZulu-Natal
2012 - 2014	President, South African Medical Research Council
Since 2000	Adjunct Professor of Medicine, Weill Medical College, Cornell University, New York
Since 2002	Director: Centre for the AIDS Programme of Research in South Africa (CAPRISA)
Since 2005	Pro Vice-Chancellor (Research), University of KwaZulu-Natal
Since 2005	Adjunct Professor, Clinical Epidemiology and Health Services Research, Graduate School of Medical Sciences, Cornell University, New York
Since 2011	Associate Member, Ragon Institute of Massachusetts General Hospital (MGH), Massachusetts Institute of Technology (MIT) and Harvard University
Since 2014	Director: MRC HIV-TB Pathogenesis and Treatment Research Unit
Since 2015	Director: DST-NRF Centre of Excellence in HIV Prevention
Since 2016	CAPRISA Professor of Global Health, Department of Epidemiology, Columbia University
Since 2019	Adjunct Professor in Immunology and Infectious Diseases, Harvard University
Since 2022	Director: CAPRISA Global Virus Network Centre of Excellence

[Honors and Awards]

1988	Reebok Human Rights Award from the Reebok Foundation - the award was dedicated to the work of the anti-apartheid doctors organization, NAMDA (The National Medical and Dental Association) for its contributions to health and human rights.
2005	Best Man Award in the Science & Technology category from Men's Health Magazine
2008	Hero in Medicine Award from the International Association of Physicians for AIDS Care (IAPAC)
2009	TWAS Prize in Medical Sciences from The World Academy of Sciences (TWAS)
2011	President's Award for Outstanding Achievement in World Health (to the CAPRISA 004 Leadership Team) from DIA (Drug Information Association)
2011	Research leading to Innovation Award (to Salim and Quarraisha Abdool Karim on behalf of the CAPRISA 004 Leadership Team) from the South African National Science & Technology Forum (NSTF) jointly with BHP Billiton in recognition of the contributions to HIV prevention through the CAPRISA 004 study
2011	Allan Rosenfield Alumni Award for Excellence (jointly to Salim and Quarraisha Abdool Karim) from Columbia University's Alumni Association in recognition for excellence in AIDS research
2011	Medicine Award - Fellowship in Art & Science of Medicine (Gold) from the South African Medical Association in recognition for excellence in research on microbicides, vaccines and TB-HIV treatment
2011	Science-for-Society Gold Medal Award from the Academy of Science in South Africa (ASSAf) in recognition of excellence in the application of outstanding scientific thinking in the service of society.
2011	Outstanding Senior African Scientist Award from the European and Developing Countries Clinical Trials Partnership (EDCTP)
2011	Olusegun Obasanjo Prize for Scientific Discovery and Technological Innovation from the African Academy of Sciences (to Salim and Quarraisha Abdool Karim)
2012	N'Galy-Mann Award (to Salim and Quarraisha Abdool Karim) for

	global contributions in HIV epidemiology and clinical research
2012	Minara recognition award for Academic Excellence (to Salim and Quarraisha Abdool Karim)
2013	John F. W. Herschel Medal in recognition of Highly Distinguished Multidisciplinary Contributions to the furtherance of Science from the Royal Society of South Africa
2013	Distinguished Scholar Award from the Biomedical HIV Prevention Forum of Nigeria
2014	DSc (Medicine) (Honoris causa) from the University of Cape Town
2014	US Science and Technology Pioneers Prize (to the CAPRISA 004 trial team) from the United States Agency for International Development
2014	Mayor's Award from the eThekwini Metro, South Africa
2015	Kwame Nkrumah Continental Scientific Award from the African Union (highest scientific award in Africa)
2015	Platinum Lifetime Achievement Award from the South African Medical Research Council
2015	"MASEA Award" from the KwaZulu-Natal Department of Health
2017	Lifetime Achievement Award from the Institute of Human Virology, USA (to Salim and Quarraisha Abdool Karim)
2018	Al-Sumait Prize from the Amir of Kuwait and the Kuwait Foundation for the Advancement of Science
2020	John Dirks Canada Gairdner Global Health Award from the Gairdner Foundation, Canada (to Salim and Quarraisha Abdool Karim)
2020	John Maddox Prize for Standing up for Science from Sense about Science and Nature (shared prize awarded jointly to both Dr. A Fauci and Dr. Salim S. Abdool Karim)
2020	500 years of the Straits of Magellan Award from the government of Chile (to Salim and Quarraisha Abdool Karim)
2020	The Sunday Times Top 100 Honorary Award for contributions to the South African Covid-19 response
2021	CPHIA 2021 Lifetime Achievement in Public Health Award from the African Union (AU) and Africa CDC
2021	Honorary Doctorate: DSc (honoris causa) from Rhodes University

2021	UNISA Chancellor's Calabash Award from the University of South Africa
2022	Honorary Fellowship from The College of Pathologists in Virology from The Colleges of Medicine of South Africa
2022	VinFuture Special Prize from the VinFuture Foundation in Vietnam

2. Dr. Quarraisha Abdool Karim

[Date of birth]

March 28th, 1960 (in the Republic of South Africa)

[Education and Research Career]

1981	BSc (Microbiology, Biochemistry), University of Durban-Westville, South Africa
1983	BSc (Hons) (Biochemistry), University of Witwatersrand, South Africa.
1986	Higher Education Diploma (Post-graduate), University of South Africa.
1988	MS (Parasitology), Columbia University, United States
1989 - 1994	Senior Epidemiologist, South African Medical Research Council
1995	Diploma in Public Service Management (cum laude), University of Pretoria, South Africa.
1995 - 1997	National Director: AIDS and STI Control Programme, Department of Health, Government of South Africa
1997 - 1999	Head: AIDS Research Programme, Centre for Epidemiological Research in South Africa, South African Medical Research Council
2000	PhD (Medicine), University of Natal, South Africa
2000 - 2001	Assistant Professor, Department of Epidemiology, Mailman School of Public Health, Columbia University, New York
2001 - 2003	Adjunct Associate Professor in Epidemiology, Mailman School of Public Health, Columbia University, New York
2001 - 2003	Honorary Associate Professor, School of Family Medicine and Public Health, Nelson R Mandela Medical School, University of KwaZulu-Natal, Durban, South Africa

Since 2002	Associate Scientific Director, CAPRISA
2003 - 2010	Associate Professor, School of Family and Public Health Medicine, Nelson R Mandela Medical School, University of Natal, Durban, South Africa
2003 - 2013	Associate Professor in Epidemiology, Mailman School of Public Health, Columbia University, New York
2009 - 2012	Visiting Scientist, Massachusetts General Hospital and Visiting Lecturer, Harvard University
2011 - 2013	Adjunct Professor in Public Health and Family Medicine, University of KwaZulu-Natal
Since 2013	Professor in Clinical Epidemiology, Mailman School of Public Health, Columbia University.
Since 2014	Adjunct Professor in Public Health, University of KwaZulu-Natal
Since 2018	Pro Vice-Chancellor (African Health), University of KwaZulu-Natal

[Honors and Awards]

1993	ASHOKA Fellow in recognition of leadership in the field of HIV/AIDS
1997	On-Trac Award from the National AIDS Convention of South Africa
2010	TAC Recognition Award from the Treatment Action Campaign
2011	UNISA Chancellor's Calabash Outstanding Educator Award from the University of South Africa
2011	DIA President's Award for Outstanding Achievement in World Health (to the CAPRISA 004 Leadership Team) from the Drug Information Association
2011	Research leading to Innovation Award (to Quarraisha and Salim Abdool Karim on behalf of the CAPRISA 004 Leadership Team) from the South African National Science & Technology Forum (NSTF) jointly with BHP Billiton in recognition of the contributions to HIV prevention through the CAPRISA 004 study
2011	Allan Rosenfield Alumni Award for Excellence (jointly to Quarraisha and Salim Abdool Karim) from Columbia University's Alumni Association in recognition for excellence in AIDS research
2011	Olusegun Obasanjo Prize for Scientific Discovery and

	Technological Innovation from the African Academy of Sciences (to Quarraisha and Salim Abdool Karim)
2012	N'Galy-Mann Award (to Quarraisha and Salim Abdool Karim) for global contributions in HIV epidemiology and clinical research
2012	Minara recognition award for Academic Excellence (to Quarraisha and Salim Abdool Karim)
2012	TWAS Prize in Medical Sciences from The World Academy of Science
2013	MEC's Annual Service Excellence Award from the Department of Health KwaZulu-Natal
2013	Order of the Mapungubwe, President of South Africa (highest national order of South Africa)
2013	Convocation Award from the University of KwaZulu-Natal
2013	Kwame Nkrumah Regional Scientist Award from the African Union
2014	South African National Research Foundation A2-Rated Scientist
2014	TWAS-Lenovo Science Prize from The World Academy of Science (TWAS)
2014	Scientific Merit Award (gold medal) from the South African Medical Research Council
2014	Science-for-Society Gold Medal ASSAf Award from the Academy for Science in South Africa
2015	eThekwini Living Legends Award from the City of Durban, in recognition of contributions to HIV and Women's Health
2016	L'Oreal-UNESCO Women in Science Laureate for Africa and the Middle East
2016	Standard Bank Top Women in Science Award
2016	Financial Times Top 10 women leaders for 2016
2017	Lifetime Achievement Award from the Institute of Human Virology, USA (to Quarraisha and Salim Abdool Karim)
2017	Honorary Philosophiae Doctor Honoris Causa from the University of Johannesburg
2018	Excellence in Healthcare Award from the KwaZulu-Natal Doctors Healthcare Coalition
2018	HPTN 2018 Ward Cates Spirit Award from the International HIV

	Prevention Trials Network
2018	Lifetime Achievement Award for valuable contribution in the field of HIV medicine and infectious diseases from the HIV Congress, Mumbai
2018	Women Fellows in Leadership Recognition Award from the African Academy of Science
2019	African Leadership Award, Paris
2019	NRF A1 rated Scientist, South African National Research Foundation
2020	John Dirks Canada Gairdner Global Health Award from the Gairdner Foundation, Canada (to Quarraisha and Salim Abdool Karim)
2020	Christophe Merieux Infectious Diseases Award from the French Academy of Sciences
2020	500 years of the Straits of Magellan Award from the government of Chile (to Quarraisha and Salim Abdool Karim)
2020	University of Stellenbosch Honorary Philosophiae Doctor Honoris Causa
2021	John F. W. Herschel Medal from the Royal Society of South Africa

3. Major Publications of Drs. Salim and Quarraisha Abdool Karim

A. New HIV prevention strategies for women

1. *Abdool Karim Q, Abdool Karim SS*, Frohlich JA, Grobler AC, Baxter C, Mansoor LE, Kharsany AB, Sibeko S, Mlisana KP, Omar Z, Gengiah TN, Maarschalk S, Arulappan N, Mlotshwa M, Morris L, Taylor D. Effectiveness and safety of tenofovir gel, an antiretroviral microbicide, for the prevention of HIV infection in women. ***Science*** 2010; 329(5996):1168-74.
2. *Abdool Karim SS, Abdool Karim Q*, Kharsany ABM, Baxter C, Grobler AC, Werner L, Kashuba A, Mansoor LE, Samsunder N, Mindel A, Gengiah TN, for the CAPRISA 004 Trial Group. Tenofovir gel for the prevention of Herpes Simplex Virus Type 2 infection. ***New England Journal of Medicine*** 2015; 373:530-9.

3. *Abdool Karim SS*, Kashuba AD, Werner L, *Abdool Karim Q*. Drug concentrations after topical and oral antiretroviral pre-exposure prophylaxis: implications for HIV prevention in women. ***Lancet*** 2011; 378(9787):279-81.

4. Klatt NR, Cheu R, Birse K, Zevin AS, Perner M, Noël-Romas L, Grobler A, Westmacott G, Xie IY, Butler J, Mansoor L, McKinnon LR, Passmore JS, *Abdool Karim Q, Abdool Karim SS*, Burgener AD. Vaginal bacteria modify HIV tenofovir microbicide efficacy in African women. ***Science*** 2017; 356(6341):938-945.

B. New insights into HIV transmission and risk factors in women in Africa

5. de Oliveira T, Kharsany AB, Gräf T, Cawood C, Khanyile D, Grobler A, Puren A, Madurai S, Baxter C, *Abdool Karim Q, Abdool Karim SS*. Transmission networks and risk of HIV infection in KwaZulu-Natal, South Africa: a community-wide phylogenetic study. ***Lancet HIV*** 2017; 4(1):e41-e50.

6. *Abdool Karim Q*, Kharsany ABM, Frohlich JA, Werner L, Mashego M, Mlotshwa M, Madlala BT, Ntombela F, *Abdool Karim SS*. Stabilizing HIV prevalence masks high HIV incidence rates amongst rural and urban women in KwaZulu-Natal, South Africa. ***International Journal of Epidemiology*** 2011; 40: 922-930.

7. McKinnon LR, Liebenberg LJ, Yende-Zuma N, Archary D, Ngcapu S, Sivro A, Nagelkerke N, Garcia Lerma JG, Kashuba AD, Masson L, Mansoor LE, *Abdool Karim Q, Abdool Karim SS*, Passmore JS. Genital inflammation undermines the effectiveness of tenofovir gel in preventing HIV acquisition in women. ***Nature Medicine*** 2018; 24(4): 491-496.

8. Liebenberg L*, McKinnon L*, Yende-Zuma N*, Garrett N, Baxter C, Kharsany A, Archary D, Rositch A, Samsunder N, Mansoor L, Passmore J-A, *Abdool Karim S, Abdool Karim Q*. HPV infection and the genital cytokine milieu in women at high risk of HIV acquisition. ***Nature Communications*** 2019; 10: 5227

C. Development of anti-HIV broadly neutralizing antibodies for HIV prevention in women

9. Moore PL, Gray ES, Wibmer CK, Bhiman JN, Nonyane M, Sheward DJ, Hermanus T, Bajimaya S, Tumba NL, Abrahams MR, Lambson BE, Ranchobe N, Ping L, Ngandu N, *Abdool Karim Q, Abdool Karim SS*, Swanstrom RI, Seaman MS,

Williamson C, Morris L. Evolution of an HIV glycan-dependent broadly neutralizing antibody epitope through immune escape. ***Nature Medicine*** 2012; 18(11):1688-92.

10. Doria-Rose NA, Schramm CA, Gorman J, Moore PL, Bhiman JN, DeKosky BJ, Ernandes MJ, Georgiev IS, Kim HJ, Pancera M, Staupe RP, Altae-Tran HR, Bailer RT, Crooks ET, Cupo A, Druz A, Garrett NJ, Hoi KH, Kong R, Louder MK, Longo NS, McKee K, Nonyane M, O'Dell S, Roark RS, Rudicell RS, Schmidt SD, Sheward DJ, Soto C, Wibmer CK, Yang Y, Zhang Z, Mullikin JC, Binley JM, Sanders RW, Wilson IA, Moore JP, Ward AB, Georgiou G, Williamson C, *Abdool Karim SS*, Morris L, Kwong PD, Shapiro L, Mascola JR. Developmental pathway for potent V1V2-directed HIV-neutralizing antibodies. ***Nature*** 2014; 509(7498):55-62.

11. Bhiman JN, Anthony C, Doria-Rose NA, Karimanzira O, Schramm CA, Khoza T, Kitchin D, Botha G, Gorman J, Garrett NJ, *Abdool Karim SS*, Shapiro L, Williamson C, Kwong PD, Mascola JR, Morris L, Moore PL. Viral variants that initiate and drive maturation of V1V2-directed HIV-1 broadly neutralizing antibodies. ***Nature Medicine*** 2015; 21(11):1332-6.

D. Treatment of HIV and tuberculosis co-infection

12. *Abdool Karim SS*, Naidoo K, Grobler A, Padayatchi N, Baxter C, Gray A, Gengiah T, Nair G, Bamber S, Singh A, Khan M, Pienaar J, El-Sadr W, Friedland G, *Abdool Karim Q*. Timing of initiation of antiretroviral drugs during tuberculosis therapy. ***New England Journal of Medicine*** 2010; 362(8):697-706.

13. *Abdool Karim SS*, Naidoo K, Grobler A, Padayatchi N, Baxter C, Gray AL, Gengiah T, Gengiah S, Naidoo A, Jithoo N, Nair G, El-Sadr WM, Friedland G, *Abdool Karim Q*. Integration of antiretroviral therapy with tuberculosis treatment. ***New England Journal of Medicine*** 2011; 365(16):1492-501.

14. *Abdool Karim SS, Abdool Karim Q*, Friedland G, Lalloo U, El-Sadr WM. Implementing antiretroviral therapy in resource-constrained settings: opportunities and challenges in integrating HIV and tuberculosis care. ***AIDS*** 2004; 18(7):975-9.

E. Contributions to HIV policy development

15. *Abdool Karim Q, Abdool Karim SS*. HIV—no time for complacency. ***Science*** 2018; 360: 1153.

16. *Abdool Karim SS, Abdool Karim Q*. AIDS research must link to local policy. ***Nature*** 2010; 463(7282):733-4.

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Brief Organizational Record of Guinea Worm Eradication Program

[Essentials of the Program]

Started in 1980.

Covered Countries:

Current (5): Angola, Chad, Ethiopia, Mali, South Sudan

Stopped transmission and/or pre-certification (2): Sudan, *DRC

Certified Guinea worm-free (16): Benin, Burkina Faso, Cameroon, Central African Republic, Cote d'lvoire, Ghana, *India, Kenya, Mauritania, Niger, Nigeria, Pakistan, Senegal, Togo, Uganda, Yemen

Leading Organization: The Carter Center

Key Partners: National governments, local communities, and many local, national, and international partners, including WHO, CDC, and UNICEF.

[Chronology]

1980	Smallpox is certified eradicated and is the first disease eradicated in history; the U.S. Centers for Disease Control and Prevention (CDC), under the leadership of Dr. Donald Hopkins, begins to explore the eradication of the second human disease, Guinea worm.
1986	Former U.S. President Jimmy Carter becomes the champion for the eradication of an obscure neglected disease, Guinea worm. The Carter Center, under the leadership of Dr. Hopkins, assumes leadership of the global campaign and begins activities in Pakistan (certified as eliminated in 1996).
1988	Launched in Nigeria (certified in 2013), Ghana (certified in 2015) and Kenya (certified in 2018).
1989	in Cameroon (certified in 2013).
1991	in Ethiopia (currently endemic).
1992	in Burkina Faso (certified in 2011) and Senegal (certified in 2004).
1993	in Benin (certified in 2009) and Chad (currently endemic).
1995	in Cote D'Ivoire (certified in 2013), Mauritania (certified in 2009), Yemen (certified in 2004), and Sudan (transmission stopped in

	2002; preparing application*).
1996	in Uganda (certified in 2009).
2000	in Central African Republic (certified in 2007).
2002	in Togo (certified in 2011).
2003	in Mali (currently endemic).
2011	in South Sudan, programmatic activities continue as it becomes the world's newest country (currently endemic).
2018	Reported in Angola (currently endemic).
2022*	The Democratic Republic of the Congo (submitted application for certification; results pending)

* The WHO is the only organization that can officially certify the elimination or eradication of any disease.
* To date, the World Health Organization (WHO) has certified 199 countries free of Guinea worm; only seven have not been certified, including the Democratic Republic of the Congo, where no case has been reported since 1958. The DRC has submitted, and Sudan intends to submit its dossier for certification in 2022.
* When transmission is interrupted, The Carter Center provides continued assistance in surveillance and helps endemic countries prepare for official evaluation by the independent International Commission for the Certification of Dracunculiasis Eradication and certification by the WHO. The CDC provides technical assistance and verifies that worm specimens truly are Guinea worms.
* Early in the campaign, in 1983, India launched its own program, reporting its last indigenous case in 1996. India was certified in 2000.

[Honors and Awards]

A Selection of Awards Received by Members of the Guinea Worm Eradication Program (by recipient)

2006	**The Carter Center** - Gates Award for Global Health, Bill & Melinda Gates Foundation
2017	Recognizing Excellence Around Champions of Health (REACH) Awards bestowed by H.H. Sheikh Mohamed bin Zayed, Crown Prince of Abu Dhabi, United Arab Emirates - **Former U.S. President Jimmy Carter**: Lifetime Achievement Award

	- **Dr. Nabil Aziz Awad Alla (Sudan)**: Courage Award - **Dr. Adamu Keana Sallau (Nigeria)**: Last Mile Award - Ms. **Regina Lotubai Lomare Lochilangole (South Sudan)**: Unsung Hero Award - Mr. **Daniel Madit Kuol Madut, South Sudan**: Unsung Hero Award
2002	**Former U.S. President Jimmy Carter, founder, The Carter Center** -Nobel Peace Prize
2016	**Mr. Adam Weiss, M.P.H., Director, Guinea Worm Eradication Program** -Charles C. Shepard Award, Rollins School of Public Health, Emory University
2015 2017	**Mr. Craig Withers, M.B.A., M.H.A., Vice President for Carter Center Overseas Operations and longtime Guinea worm warrior** -Albert Bandura Award as an Influencer, Vital Smarts, Inc. -Certificate of Appreciation, government of South Sudan for contributions to the eradication of Guinea worm
1983 1998 2004 2005 2007 2012	**Dr. Donald R. Hopkins, Special Advisor for Guinea Worm Eradication** -CDC Medal of Excellence (*Distinguished Service Medal of the U.S. Public Health Service) -Knight of the National Order of Mali -Medal of Honor of Public Health (Gold), Niger -Champion of Public Health, Tulane University -Mectizan Award, Merck Inc. -James F. and Sarah T. Fries Foundation Prize for Improving Health -Pumphandle Award for Outstanding Contributions to Applied Epidemiology, Council of State and Territorial Epidemiologists - Honorary doctorates from Harvard University, Yale University, Morehouse College, and Emory University
1990	**Dr. Ernesto Ruiz-Tiben, Ph.D., Former Director (1998-2008), Guinea Worm Eradication Program** -Outstanding Service Medal, CDC

2017	-Certificate of Appreciation, Government of South Sudan for contributions to the eradication of Guinea worm
2017	**Ms. Kelly Callahan, Director, Carter Center's Trachoma Control Program and longtime Guinea worm warrior** -2017 Sargent Shriver Award for Distinguished Humanitarian Service, U.S. Peace Corps
2012	**Dr. Emmanuel S. Miri, Country Director Nigeria, Carter Center Health Programs** **-**Officer of the Order of the Federal Republic of Nigeria in Abuja,
2011	**Dr. Abdulrahman A. Al-Awadi**, Kuwait -Award from His Highness the Amir Sheikh Sabah Al-Ahmad Al-Jaber Al-Sabah for his 30 years of service to Kuwait.

[Major Publications]

Peer-review publishing and operational research:

Beginning with its Guinea Worm Eradication Program, The Carter Center has built a reputation for pioneering operational research, *often while both* implementing and evaluating interventions through the publication of findings in the peer-reviewed literature. These hundreds of scholarly publications have demonstrated success, described challenges, contributed to local and global best practices, and informed WHO guidelines.

Similarly, hundreds of earned media stories have been placed and dozens of human interest stories have been collected in various formats to document the Guinea Worm Eradication Program's journey to zero.

Here are five examples

1. Eberhard, Mark L., et al., "The Peculiar Epidemiology of Dracunculiasis in Chad." *American Journal of Tropical Medicine and Hygiene*, vol. 90, no. 1, 2014, pp. 61-70.
2. Priest, Jeffrey W., et al., "Development of a Multiplex Bead Assay for the Detection of Canine IgG4 Antibody Response to Guinea Worm." *American Journal of Tropical Medicine and Hygiene*, vol. 104, no. 1, 2021, pp. 303-312.

3.Ribado, Jessica V., et al., "Linked surveillance and genetic data uncovers

programmatically relevant geographic scale of Guinea worm transmission in Chad." PLOS Neglected Tropical Diseases, vol 15, no. 7

4. Wuilbercq, Emeline, '"End is in sight': tackling a rare disease in a global pandemic." *Thomson Reuters Foundation News.* 29 April 2021.
5. "Guinea Worm Warrior's Weapon is a Song." *The Carter Center.* 24 August 2021.

(END)