Open Letter on Gene Drive Technology

December 5, 2016

To the Parties to the Convention on Biological Diversity and the Parties to the Cartagena Protocol on Biosafety:

We urge you to support ongoing and new gene drive research, building on cautious and responsible practices and broad stakeholder dialogue.

The potential for gene drive technology is very significant. It is a novel tool which may enable interventions that are durable, cost-effective, and highly efficacious, complementing existing efforts to improve human health and environmental sustainability.

We urge you to resist current advocacy efforts demanding a ban on gene drive research or on the future use of gene drive-based products. Imposing a moratorium on such promising life-saving and life-improving innovations so early in their development would be unwarranted,

damaging and irresponsible. Blanket bans discourage research and prevent regulators, policy-makers and other stakeholders from having an informed conversation about the use of new technologies.

One potential application of gene drive is to reduce the burden of vector-borne diseases such as malaria, dengue and the Zika virus, which account for more than 17% of all infectious diseases, and cause more than 1 million deaths annually. The cost of such disease is tremendous: malaria alone is estimated to cost African countries USD $12 billion a year.

Other potential applications, such as for the control of invasive alien species for conservation purposes, are also being investigated. The total loss to the world economy as a result of invasive non-native species has been estimated at 5% of global annual production. Invasive species are the leading cause of island extinctions, and the second-leading cause of extinctions on continental mainlands.

Current research on gene drive is at an early stage, and so definitive decisions about gene drive-based products is premature at best. Based on current progress, products ready for field testing are 5 years out, possibly longer. This gives scientists and stakeholders, particularly those from countries where gene drives might one day be employed, time to consider the important questions of regulation, risk assessment, ethics, and engagement, and to prepare for assessing an actual application.

There are regulatory systems set up to rigorously assess new classes of medicines, new vaccines, new pesticides, and applications of living modified organisms, for risks and benefits on a case-by-case basis. A moratorium on the use of gene drive violates the case by case approach of these systems and risks closing the door on critical new tools.

We need research on gene drives that is careful, incremental, and independently vetted. There are already efforts underway to define frameworks for responsible research and use. Both the US National

Academies of Sciences (NAS) (http://nas-sites.org/gene-drives/files/2015/08/Gene-Drives-Brief06.pdf) and the UK House of Lords (http://www.publications.parliament.uk/pa/ld201516/ldselect/ldsctech/68/68.pdf) have recently published reports noting the great potential of gene drive research while also laying out principles for a safe and constructive path forward. The African Union has also mandated New Partnership for African Development (NEPAD) to seek expert views on emerging technologies, such as gene drive. These open consultative approaches are the best way forward and we urge Parties to the Convention to participate in future dialogues as a way to help build consensus.

We recognize that gene drive applications may work in some areas or for some applications, and not for others. We need the knowledge and understanding acquired through research and development to enable national authorities to engage in detailed case-by-case assessments of each application of gene drive technology.

We hope that you will express support in the upcoming MOP8 and COP13 for further research in this field and not make a foregone conclusion for or against this possible tool before its potential and risks can be appropriately evaluated.

Signed:

Prof. Austin Burt,
Professor of Evolutionary Genetics
Imperial College London
Principal Investigator, Target Malaria

Pf Andrea Crisanti
Professor of Molecular Parasitology
Imperial College London

Prof. Abdallah Daar
Professor of Clinical Public Health and Global Health
Dalla Lana School of Public Health
Professor of Surgery
University of Toronto

Dr. Fred Aboagye-Antwi
Lecturer in Medical Entomology and Parasitology
Department of Animal Biology and Conservation Science, School of Biological Sciences
College of Basic and Applied Sciences
University of Ghana

Prof. Traoré Sékou F.
Director of MRTC Entomology
FAPH – University of Sciences, Techniques and Technologies of Bamako, Mali

Dr Charles Mbogo
Chief Research Scientist
KEMRI- Wellcome Trust
President of the Pan African Mosquito Control Association (PAMCA)

Dr. Louis G. Mukwaya
Former Director of Research &
Former Asst.Director, Uganda National Health Research Organization (UVRI)

Prof. Paulo Paes de Andrade
Professor
Department of Genetics
Federal University of Pernambuco, Recife, Brazil

Prof Halidou Tinto, PharmD, PhD
Directeur de Recherche
Professeur de Parasitologie Associé à l'Univ de Bobo-Dioulasso
Directeur Régionale de l'IRSS du Centre-Ouest
Chevalier de l'Ordre des Plames Académiques

Dr. Athanase Badolo
Associate Professor of Medical Entomology
Department of Animal Biology and Ecology
Université Ouagadougo – Pr Joseph Ki-Zerbo
Burkina Faso

Prof. Dyann Wirth, Ph.D.
Richard Pearson Strong Professor and
Chair, Immunology and Infectious Diseases
Harvard T.H. Chan School of Public Health

Dr. Jonathan Kayondo
Ag. Head Entomology Department
Uganda Virus Research Institute
Principal Investigator, Target Malaria Uganda

Dr. Coulibaly Mamadou B.
Vector Biologist, Malaria Research & Training Center (MRTC)
University of Sciences, Techniques & Technologies of Bamako, Mali
Principal Investigator Target Malaria Mali

Dr. Stephen Higgs
Peine Professor of Biosecurity,
University Distinguished Professor, Diagnostic Medicine and
Pathobiology, Kansas State University

Dr. George K. Christophides
Professor of Infectious Diseases and Immunity
Imperial College London

Prof. James P. Collins
Ullman Professor
Arizona State University/Tempe

Nora Besansky
O'Hara Professor of Biological Sciences
University of Notre Dame

Prof. Jim Lavery, Ph.D.
Hilton Chair in Global Health Ethics
Professor, Hubert Department of Global Health
Rollins School of Public Health
Emory University

Prof. Anthony A. James
Irvine
California

Dr. Jo Lines
Reader of Malaria Control and Vector Biology
London School of Tropical Hygiene and Medicine

Prof. Jake Tu
Professor
Dept. of Biochemistry
Virginia Tech

Prof. Azra Ghani
Chair in Infectious Disease Epidemiology
Faculty of Medicine, School of Public Health
Imperial College London

Prof. John Mumford
Professor of Natural Resource Management
Centre for Environmental Policy
Imperial College London

Zach N. Adelman
Associate Professor
Department of Entomology
Texas A&M University

Dr. Barry Stoddard
Member
Fred Hutchinson Cancer Research Center

Prof. Roberta Spaccapelo
Prof. of Microbiology
Department of Experimental Medicine
University of Perugia

Prof. Raymond J. Monnat, Jr.
Professor of Pathology/Genome Sciences
University of Washington

Dr. John Marshall
Assistant Professor in Residence
School of Public Health
University of California, Berkeley

Prof. Julian Kinderlerer
Immediate past President, European Group on Ethics
Emeritus Professor of IP Law, IP Law & Policy Research Unit, University of Cape Town
Former Professor of biotechnology & society, TU Delft

Prof. David Threadgill, PhD
Distinguished Professor
Director of the Texas A&M Institute of Genome Sciences and Society
Texas A&M University

Andrew Cox
CEO
Invasive Species Council
Australia

Prof. Kevin M. Esvelt
MIT Media Lab
Massachusetts Institute of Technology

Ryan Phelan
Executive Director and Co-founder
Revive & Restore

Prof. Bernie Tershy
Professor
Ecology and Evolutionary Biology
UC Santa Cruz

Dr. Maharaj Krishan Bhan
National Science Professor
Indian Institute of Technology, Delhi

David Hartwell
Vice chair
National Audubon

Prof. Laurie Zoloth, PhD.
President, Faculty Senate Northwestern University
A McCormick Professor, 2009
Director of Graduate Studies
Department of Religious Studies
Program in Jewish Studies
Program in Bioethics and Medical Humanities

Weinberg College of Arts and Sciences
Feinberg School of Medicine
Northwestern University

Dr. Paulina Tindana
Bioethicist
Senior Research Fellow, Navrongo Health Research Centre, Ghana

Dr. Thomas Maina Kariuki
Director
Alliance for Accelerating Excellence in Science in Africa
Fellow, African Academy of Sciences (AAS)

Dr. Karen Poiani
CEO
Island Conservation

Prof. Yeya Tiemoko Touré
Medical entomologist
Faculté de Médecine et
d'odontostomatologie
Bamako, Mali

Dr. Daniel Masiga
Senior Scientist and Head of the
Molecular Biology, Bioinformatics
& Biostatistics Unit, ICIPE

Dr. Ouedraogo Sylvin
Directeur de l'Institut de
Recherche en Sciences de la
Sante (IRSS), Burkina Faso
Directeur de Recherche
Chevalier de l'Ordre des Palmes
Academiques

Dr. Fredros Okumu, PhD
Director of Science
Ifakara Health Institute, Tanzania

Dr Jane Kengeya-Kayondo
Regional Coordinator, East &
Southern Africa
Africa Research Excellence Fund
C/o Medical Research Council
Unit on AIDS
Uganda Virus Research Institute

Dr. Pontiano Kaleebu
Acting Director, Uganda Virus
Research Institute
Director, Medical Research
Council – UVRI Uganda Research
Unit on AIDS

Prof. Jerome Amir Singh
Director
Ethical, Legal, Social, Cultural
Issues (ELSCI) Programme on
Synthetic Biology Head of Ethics
and Law, CAPRISA University of
KwaZulu-Natal, Durban
South Africa

Prof. Margareth Capurro
Associate Professor
Department of Parasitology
University of Sao Paulo
Brazil

Prof. John Godwin, PhD
Professor of Biological Sciences,
North Carolina State University

Dr Dabire K Roch
Directeur Regionale de l'Institut de
Recherche en Sciences de la
Sante (IRSS)
Directeur de Recherche
Chevalier de l'Ordre des Palmes
Academiques

Prof. Kevin Marsh
Professor of Tropical Medicine
University of Oxford
Senior Advisor, African Academy
of Sciences

Dr Diabate Abdoulaye
Chef de Bureau liaison recherche
développement de la Direction
Régionale de l'Ouest de l'IRSS,
Burkina Faso
Maitre de Recherche
Chevalier de l'Ordre des Palmes
Académiques
Principal Investigator, Target
Malaria Burkina Faso

Prof. Peter Agre, M.D.
Bloomberg Distinguished
Professor and Director
Johns Hopkins Malaria Research

Institute
Johns Hopkins Bloomberg School
of Public Health

Dr. Rino Rappuoli
Chief Scientist and Head External
R&D
GlaxoSmithKline Vaccines

Prof. Ethan Bier
Professor, University of California,
San Diego
Principle Investigator, Tata Institute
for Active Genetics and Society

Dr. Claudia Emerson
Director, Institute on Ethics &
Policy for Innovation
McMaster University

Dr. Andrew M. Scharenberg M.D.
Professor of Pediatrics
Adjunct Professor of Immunology
Co-director, Program in Cell and
Gene Therapy
University of Washington School of
Medicine
Seattle Children’s Research
Institute

Dr. Allan Ronald
Distinguished Emeritus Professor
University of Manitoba

Prof. Steven Russell
Department of Genetics
University of Cambridge

Dr. Nicole L. Achee, PhD.
Principal Investigator
Spatial Repellents for Control of
Vector-borne Disease

Prof. Paul Freemont
Head of the Section of Structural
Biology Department of Medicine
Imperial College London

Prof. Charles Godfray
Hope Professor of Entomology,
Department of Zoology
Oxford University
Project partner, Target Malaria

Prof. Omar S. Akbari, Ph.D.
Institute for Integrative Genome
Biology
Center for Disease Vector
Research
Department of Entomology
University of California, Riverside
(UCR)

Greta Immobile Molaro
Chief Executive Officer
Polo d’Innovazione Genomica,
Genetica e Biologia

Dr. Nikolai Windbichler
Research Fellow
Imperial College London

Dr. Philippos A. Papathanos
Section of Genomics and
Genetics,
Department of Experimental
Medicine
University of Perugia

Dr. David O'Brochta
Professor
University of Maryland College
Park

Prof. Bruce A. Hay
Professor
Division of Biology and Biological
Engineering
California Institute of Technology

Prof. Francesco Frati
Rector
University of Sienna, Italy

Dr. Jeremy Herren, PhD
Visiting Scientist
Emerging Infectious Disease Lab,
ICIPE

Donald Croll
Professor
Ecology and Evolutionary Biology
UC Santa Cruz

Stewart Brand
Co-founder
Revive & Restore

Dr. Douglas W. Miano
Senior Lecturer
Department of Plant Science and
Crop Protection
University of Nairobi

Sir Brian Greenwood
Professor of Clinical Tropical
Medicine
London School of Hygiene and
Tropical Medicine

Prof Luke Alphey, PhD
The Pirbright Institute

Antoinette Piaggio, PhD
Molecular Ecologist

Dr. Evelyn Gitau, PhD
Programme Manager,
Alliance for Accelerating
Excellence in Science in Africa
Grand Challenges Africa

Prof. Frederic Tripet
Professor in Medical and
Molecular Entomology
Director Centre for Applied
Entomology and Parasitology
Keele University

Mark Q. Benedict
Research Biologist
Atlanta, Georgia USA