



MEMORANDUM OF UNDERSTANDING

among the Parties of the EARTH BIOGENOME PROJECT

This Memorandum of Understanding (“MOU”) is entered into by and among the Parties set forth in Appendix 1 to this MOU (“Original Parties”), as of the Effective Date specified hereafter. In addition, it is the expectation of those participating in the Earth BioGenome Project (“EBP”) that additional Parties from around the world will join the collaboration over time in order to participate in and contribute to the initiative (“Additional Parties”) using the process described below. The Additional Parties to the MOU are set forth in Appendix 2 to this MOU. Each of the Original Parties set forth in Appendix 1 to this MOU and each Additional Party that joins the collaboration identified in Appendix 2 to the MOU will be referred to collectively herein as the “Parties”.

1. PURPOSE

The purpose of this MOU is to provide a framework for participation in the Earth BioGenome Project through the collaboration of the Original Parties set forth in the Appendix 1 to this MOU, as well as Additional Parties identified in Appendix 2 to the MOU, who will join the collaboration over time. This MOU does not create any legally binding obligation on the part of the Parties but the Parties may contemplate entering into legally binding agreements in the future to further their collaboration. The general intent of this MOU is to establish collaboration plans for the Parties. As Additional Parties join the initiative they will be added to the MOU in accordance with the terms set forth below. The Parties seek to complement each other’s respective strengths, experience, and technologies in order to facilitate increased collaboration in environmental, biodiversity, and genomic sciences to further the goals of the Earth BioGenome Project.

2. BACKGROUND

Understanding, conserving and responsible stewardship of Earth's biodiversity are among the most challenging scientific and social challenges of the new millennium. Addressing these challenges requires fundamental new knowledge to fill the huge gaps in our understanding of the organization, evolution, functions, and interactions among organisms. This knowledge can be gained in part by sequencing and characterizing the genomes of all known eukaryotic species on Earth in a rapid and standardized fashion. To promote a global effort in biodiversity genomics, a number of institutions have organized to form an unincorporated international collaboration called the Earth BioGenome Project (EBP).

The Parties of EBP recognize that the scope of the initiative exceeds the capability of any one Party to undertake; each Party recognizes that participating in and contributing to the shared development of EBP standards and activities advances its individual interests and that of society at large. As such, the Parties believe that by entering into this MOU they will be able to develop the EBP and further their respective missions in a manner in which they would not be able to do individually.

Accordingly, the Parties have agreed that a coordinated, international, scientific effort is needed, and they hereby express their intent to become Parties of the EBP, and in doing so identify their roles and functions associated with maintaining and expanding EBP.

EBP also acknowledges that the Convention on Biological Diversity has noted "the general lack of information and knowledge regarding biological diversity and of the urgent need to develop scientific, technical and institutional capacities to provide the basic understanding upon which to plan and implement appropriate measures." To the greatest extent possible, EBP agrees to adhere to the principles that regulate the accessibility of biological materials, including the Convention on Biological Diversity (CBD, 1993), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975), the International Plant Protection Convention (IPPC, 1952), the International Treaty on Plant Genetic Resources for Food and Agriculture (IT PGRFA, 2004), the Convention on the Conservation of Migratory Species of Wild Animals (CMS, 1983), and the International Whaling Commission (IWC, 1946).

To the greatest extent possible, EBP will conduct its activities in alignment with the objectives and principles of the the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (2014). The Parties acknowledge that the EBP will have an instrumental role in unleashing valuable inclusive bioeconomy innovations for biodiverse nations that can provide an alternative path for economic development that is sustainable by design.

To the greatest extent possible, EBP will promote the principles of open accessibility to biogenomic information with the understanding that the Original Parties will address the issues of permissible use and benefit sharing as a global consensus develops.

Membership in EBP will not affect the normal operations of the Parties.

3. COLLABORATIVE OBJECTIVES

This MOU formalizes the intent of the Parties to develop a global “network of communities” as the most realistic strategy for achieving the grand challenge goal of sequencing all life on Earth. This MOU further sets forth the general intentions of the Parties to engage in these scholarly activities that are strictly non-profit seeking, in a manner that will not create a commercial advantage to any of the Parties. The Parties of EBP agree to conduct collaborative activities dedicated to achieving the following goals directly or indirectly:

- *Revise and reinvigorate our understanding of biology, ecosystems and evolution*
 - To better understand evolutionary relationships among all known organisms
 - To fully elucidate the distribution and density of species on Earth
 - To generate new knowledge of ecosystem composition and functions
 - To discover new species
 - To elucidate genome evolution
 - To discover fundamental laws that describe and drive evolutionary processes
- *Enable the conservation, protection, and regeneration of biodiversity*
 - To determine the role of climate change in sustaining biodiversity
 - To clarify how human activities and invasive species affect biodiversity
 - To develop evidence-based conservation plans for rare and endangered species

- To create genomic resources to restore damaged or depleted ecosystems
- *Maximize returns to society and human welfare*
 - Through vast new medicinal resources for human health
 - Through enhanced prediction and control of pandemics
 - Through new genetic variation for improving agriculture
 - Through novel materials and resources for bio-based industries
 - Through improvements in environmental quality and ecosystem services

4. SCOPE OF THE COLLABORATION

Parties in the EBP share an interest in generating complete genomes for biodiversity of non-human life on Earth. Through the EBP, the Parties resolve to explore ways in which they could work together to develop and increase the capacity for understanding and utilizing biodiversity from across the planet. Such collaboration will be agreed to in future written agreements, but may include the following:

- Cataloging the genome content of all Earth's biodiversity;
- Establishing mechanisms of data sharing that will build a permanent, freely-accessible resource for future scientific discovery in alignment with applicable national and international regulations and protocols to the extent possible; and
- Driving solutions for preserving Earth's biodiversity, managing its ecosystems, spawning bio-based industries, and sustaining human societies.

In order to achieve these outcomes, the Parties of the EBP recognize the need for collaboration agreed to in future written agreements to:

- Encourage active collaboration and communication;
- Ensure consistent quality standards for genomic sequencing, annotation, and analyses;
- Improve best practices for the preservation and use of genomic sample and collections.

5. IMPLEMENTATION OF SPECIFIC PROJECTS

The Parties will enter into a separate written agreement for each specific initiative or project arising under this MOU that requires the commitment of funds and other resources from two or more Parties or otherwise necessitates written documents reflecting the Parties' mutual understanding of details related to the planning, development and implementation of the project

(“Project Agreements”). Project Agreements involving the exchange of specimens, data or information will include provisions governing intellectual property rights and, if necessary, export control regulations.

6. FUNDING

This MOU creates no financial obligation or commitment of staff or other resources on the part of any Party. All activities undertaken pursuant to this MOU shall be subject to available funding and availability of in-kind resources. In general, each Party will be responsible to raise its own funds to execute the research program proposed in this MOU. In case funding opportunities or exchange funding are made available, it is understood that the applicable Parties will negotiate and sign further Project Agreements between themselves to execute the research activities described in *Scope of the Collaboration*.

7. AUTHORIZED REPRESENTATIVES

Authorized Representatives of the Original Parties are as shown in Appendix 1, and Authorized Representative of the Additional Parties are shown in Appendix 2 to this MOU.

8. DURATION, TERMINATION AND AMENDMENT

Duration. This MOU shall remain in force for five (5) years from the date it has been signed by at least four Original Parties (“Effective Date”). Any Party may terminate its own involvement in this MOU by providing 60 days’ advance written notice to the other Parties. Separate agreements entered into governing funded projects will identify appropriate mechanisms and timelines for the projects to reach an orderly conclusion in accordance with the relevant Project Agreement.

Extension and Renewal. The Parties may extend or renew this MOU by mutual agreement of a majority of the Original Parties, confirmed in a written amendment signed by each Party’s authorized signatory.

Amendment. No amendment of the terms of this MOU will be effective unless made in writing and signed by a majority of the Original Party’s authorized signatory followed by required notice of the amendments to all Parties.

Additional Parties. Additional Parties may join the collaboration over time in order to

participate in and contribute to the initiative. Additional Parties will be reflected in Appendix 2 to the MOU. They will be bound by all of the terms of the MOU. All Original Parties will be provided written notice that an Additional Party would like to join the MOU. Each Original Party will have fourteen (14) days to raise an objection in writing to the inclusion of a proposed Additional Party to the MOU. If no Original Party objects in writing to the inclusion of the proposed Additional Party within this timeframe, the Additional Party will become a Party to the MOU. If an objections is raised by an Original Party within the fourteen (14) day timeframe, the Additional Party will not join the MOU.

Entire Agreement. The terms and conditions herein constitute the entire agreement and understanding by and between the Parties and shall supersede all other communications, negotiations, arrangements, and agreements either oral or written, with respect to the subject matter herein.

9. GENERAL MATTERS

Use of Names. Each Party may use the other Party's name and/or mark in announcing and otherwise promoting this MOU or a specific Project Agreement, provided all language and phrases concerning or referring to the other Party shall be approved in writing in advance by the other Party. Except as permitted under this paragraph, Parties may only use the name, logo or trademarks of other Parties in any form, whether written, oral or visual for any purpose whatsoever, with express written permission. Nothing in this MOU shall be deemed confidential.

Nondiscrimination. In the administration of this MOU or any Project Agreements, the Parties shall not discriminate on any basis prohibited by applicable law, including on the basis of race, sex, age, disability, ethnicity, religion, or national origin.

Notices. The Parties must give all notices under this MOU in writing. All communications must be sent to the addresses set forth below or to such other address designated by the Parties by written notice. Notices are effective upon receipt.

Dispute Resolution. The Parties agree to make efforts in good faith to resolve all disputes amicably and expeditiously between themselves by good faith consultation or negotiation by the Institutional Representatives or their designees, or by any other way agreed upon by the Parties.

Non-Binding Nature. This MOU is not intended to and does not give any person who is not a

Party to it any rights to enforce any of its provisions. Nothing in this MOU will be construed as creating binding legal obligations between the Parties. This MOU is a broad statement of intent which sets forth the general basis upon which the Parties wish to proceed. No legal liability will arise in respect of any subject matter hereof unless a subsequent binding agreement is negotiated, approved, executed and delivered by the Parties to this MOU. Under no circumstances will this MOU be construed as creating or establishing any formal, legal, association, partnership, joint venture, principal/agent or master/servant relationship between the Parties.

Force Majeure. The Parties acknowledge that any project arising under this MOU may be suspended or terminated due to an event of force majeure including, but not limited to, fire, earthquake, epidemic, explosion, casualty, strike, act of war, riot, civil disturbance, terrorism, act of God, state, local or national law, decrees or ordinance, or any executive or judicial order, or any other reason beyond the Parties' control. Each Party will notify the other Party as soon as it is aware of any event of force majeure which would delay or prevent the performance. In the event of a force majeure, the Parties will consult with each other to determine a revised timeline for performance or whether to terminate the MOU.

Authorized Signatories. Each Party represents that the individuals signing this MOU have the authority to sign on its behalf in the capacity indicated.

10. COUNTERPARTS

This MOU may be executed in any number of counterparts, each of which shall be an original as against the party whose signature appears thereon, but all of which taken together shall constitute but one and the same instrument.

Appendix 1:

Original Parties to Memorandum of Understanding on the Earth BioGeome Project

(2) Party name: The Regents of the University of California on behalf of its Davis Campus,
USA




Signed: _____
Name: Cindy M. Kiel
Title: Executive Associate Vice Chancellor
On behalf of: Office of Research

(3) Party name: Carl R. Woese Institute of Genomic Biology, University of Illinois at Urbana-
Champaign, USA **The Board of Trustees of the
University of Illinois**



Signed: _____
Name: Avijit Ghosh
Title: Comptroller
On behalf of: Gene Robinson


Comptroller Delegate:
Julie Robinson, Assistant Director


(4) Party name: The Board of Trustees of The Royal Botanic Gardens at Kew, UK



Signed: _____
Name: Professor Kathy Willis
Title: Director of Science
On behalf of: Royal Botanic Gardens, Kew

(5) Party name: George Washington University, USA


Signed:



Name: Forrest Maltzman
Title: Provost
On behalf of: The George Washington University

(6) Party name: Wellcome Sanger Institute, UK


Signed:



Name: PROF. SIR MIKE STRATTON
Title: DIRECTOR + CHIEF EXECUTIVE
On behalf of: WELLCOME SANGER INSTITUTE 24 July 2018

(8) Party name: Natural History Museum of Denmark

Signed:



Name: M Thomas P Gilbert
Title: Professor of Palaeogenomics
On behalf of: Natural History Museum of Denmark


(11) Party name: The Regents of the University of California on behalf of its Santa Cruz Campus, USA

Signed:


Deirdre Beach
Digitally signed by Deirdre Beach
DN: cn=Deirdre Beach, o=UC Santa Cruz, ou=Office of Sponsored Projects, email=dbeach@ucsc.edu, c=US
Date: 2018.10.11 11:45:38 -0700

Name: Deirdre Beach
Title: Asst. Director, OSP
On behalf of: The Regents of the University of California, Santa Cruz

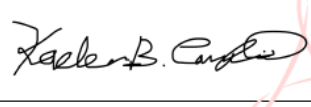
(13) Party name: Baylor College of Medicine, USA

Signed: 
Name: Richard A. Gibbs, Ph.D.
Title: Director, Human Genome Sequencing Center
On behalf of: _____

(14) Party name: Fundação De Amparo À Pesquisa Do Estado De São Paulo (Fapesp), Brasil

Signed: 
Name: Marco Antonio Zago
Title: Presidente
On behalf of: _____

(15) Party name: University of Florida, USA

Signed: 
Name: Kaden B. Canfield
Title: Asst. Director of Research
On behalf of: Vice President for Research, University of Florida

DN: cn=Kaden B. Canfield,
o=University of Florida, ou=Office
of Research,
email=kcanfield@ufl.edu, c=US
Date: 2018.08.14 17:10:49 -04'00'

(16) Party name: Beijing Genomics Institute at Shenzhen, China

Signed:

Name:

Title:

On behalf of:




(17) Party name: Max-Planck Institute of Molecular Cell Biology and Genetics, Germany

Signed:

Name:

Title:

On behalf of:



Eugene W. Myers Jr.
Managing Director


(18) Party name: SpaceTime Ventures, Brasil

Signed:

Name:

Title:

On behalf of:



JUAN CARLOS CASTILLA-RUÓLO
CHAIRMAN
SPACETIME VENTURES

Appendix 2:

Additional Parties to Memorandum of Understanding on the Earth BioGeome Project

(1) Party name:

Signed:



Name:

Aristides A.N. Patrinos Ph.D.

Title:

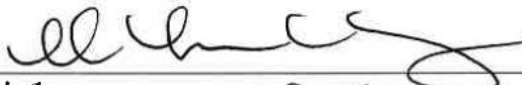
Chief Scientist

On behalf of:

THE NOVIM GROUP

(1) Party name:

Signed:



Name:

Kim McKay AO

Title:

Director + CEO

On behalf of:

Australian Museum

(1) Party name:

Signed:



Name:

DUNCAN TUISON

Title:

DVC RESEARCH

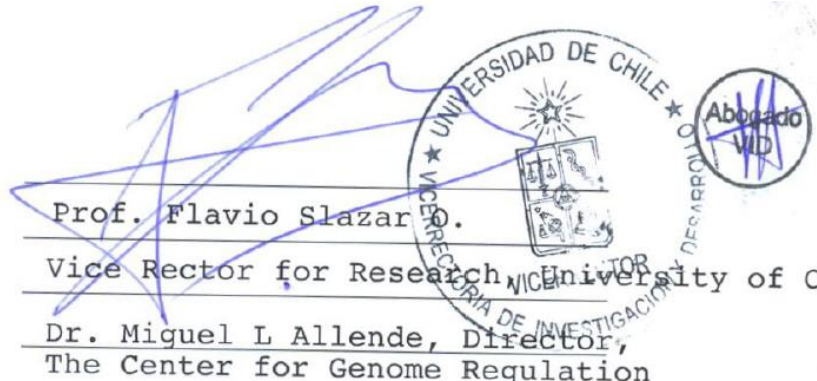
On behalf of:

THE UNIVERSITY OF SYDNEY

(1) Party name:

Signed:

Name: Prof. Flavio Slazar
Title: Vice Rector for Research, University of Chile
On behalf of: Dr. Miguel L Allende, Director,
The Center for Genome Regulation



(1) Party name:

Signed:

Name: Anna Fitzgerald
Title: Strategic Partnerships
On behalf of: Bioplatforms Australia

Anna Fitzgerald

(1) Party name:

Signed:

Name: NEIL HALL
Title: DIRECTOR
On behalf of: THE EARLHAM INSTITUTE.

Neil Hall

(1) Party name: Dalhousie University

Signed:


Name: Dr. Alice Aiken
Title: Vice President Research & Innovation
On behalf of: Dalhousie University

Alice Aiken



(1) Party name: King Abdulaziz University, Jeddah, Saudi Arabia

Signed:



Name: Prof. Dr. Abdulrahman Obaid Alyoubi
Title: President of King Abdulaziz University
On behalf of: King Abdulaziz University



(2) Party name:


(1) Party name:

Signed:


Name: François Bénard, MD
Title: Vice President, Research
BC Cancer Agency
On behalf of:

(1) Party name: Korea Polar Research Institute, Republic of Korea

Signed:

 December 17, 2018
Name: Dr. Ho Il Yoon
Title: President
On behalf of: Korea Polar Research Institute

(1) Party name: UNIVERSITAT POMPEU FABRA

Signed:


Name: Enric Vallduví
Title: Vice-rector for Projects in Research
On behalf of: UNIVERSITAT POMPEU FABRA

(1) Party name:

Signed:



Name:

Svein Stølen

Title:

Rector

On behalf of:

University of Oslo

(1) Party name: Korea University, Republic of Korea

Signed:



Name:

Hyun Park

Title:

Professor

On behalf of:

Korea University

(1) Party name:

Science for Life Laboratory, Genomics Platform, Sweden

Signed:



Name:

Ulf Gyllensten

Title:

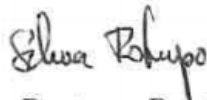
Professor, Director

On behalf of:

Science for Life Laboratory (SciLifeLab), Genomics Platform

(1) Party name: Universidad de los Andes, Bogotá – Colombia

Signed:




Name: Silvia Restrepo Restrepo


Title: Vice President for research

On behalf of: _____

(1) Party name: THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF CAMBRIDGE

Signed: 
Name: _____
Title: _____
On behalf of: Dr Jo Dekkers
Head of Research Operations
THE UNIVERSITY OF CAMBRIDGE


(1) Party name: Universidad Nacional Autónoma de México (UNAM)

Signed: 
Name: PhD Jorge Vázquez Ramos
Title: Coordinator for liaison and Technology transfer
On behalf of: ENES-Heon, lab of evolutive and population genomics (PhD Hernandez-Lopez)
Biology Institute, Evolutive Biology (PhD Zaldívar Riverón)


(19) Party Name: Duke University

Signed: Keith Hurka-Owen
Name: Keith Hurka-Owen
Title: Executive Director
On behalf of: Anne Yoder

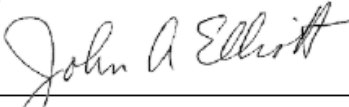
(1) Party name: LOEWE TBG - TRANSLATIONAL BIODIVERSITY GENOMICS

Signed: 
Name: AXEL JANKE
Title: PROF. DR.
On behalf of: LOEWE-TBG

(1) Party name: University of Connecticut, Institute for Systems Genomics

Signed: 
Name: Jeffrey Shoulson
Title: Vice Provost for Academic Operations
On behalf of: _____

(2) Party name:

Signed: 
Name: John Elliott
Title: Interim Provost and Executive Vice President for Academic Affairs
On behalf of: _____

- Compiled 15 June 2020