



Food and Agriculture
Organization of the
United Nations

COMMISSION ON
GENETIC RESOURCES
FOR FOOD AND
AGRICULTURE



Convention on
Biological Diversity



International Treaty
on Plant Genetic Resources
for Food and Agriculture



INITIATIVE ON
Genebanks

African BioGenome Project (AfricaBP)

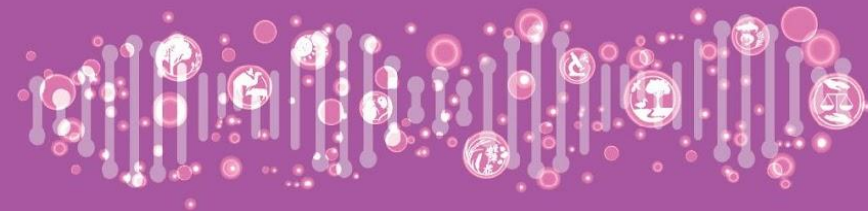
Genomics in the service
of African biological
diversity



African **BioGenome** Project

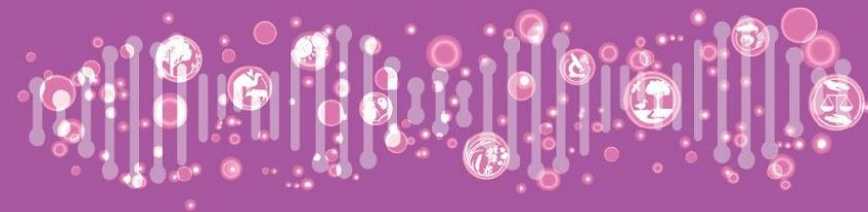
Genomics for the future of biological diversity across Africa

Dr. ThankGod Ebenezer, European Bioinformatics Institute, UK
Prof. Ntanganedzeni Mapholi, University of South Africa, South Africa
Prof. Anne Muigai, Jomo Kenyatta University Agriculture & Technology, Kenya
Prof. Appolinaire Djikeng, The University of Edinburgh, UK

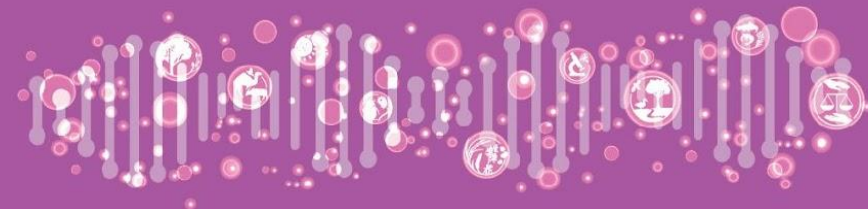


Content

- AfricaBP: Background and strategic goals/objectives
- AfricaBP key highlights
- Emerging opportunities



AfricaBP Background and Goals

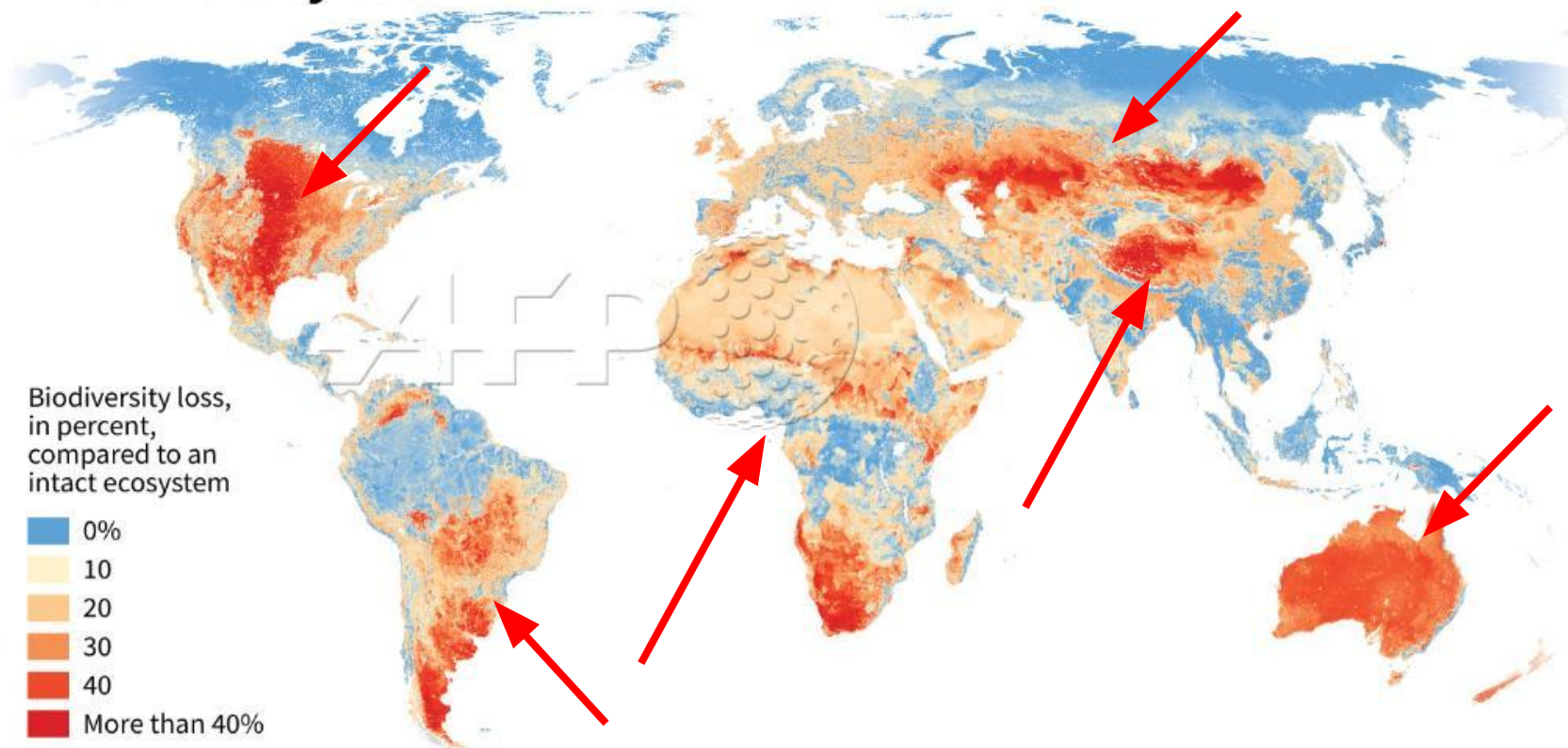


Global biodiversity loss is happening at an unprecedented scale

**Unprecedented urgency to help reverse this trend
We must protect & ensure equitable use of BD across Africa**

Africa plays significant role in global biodiversity

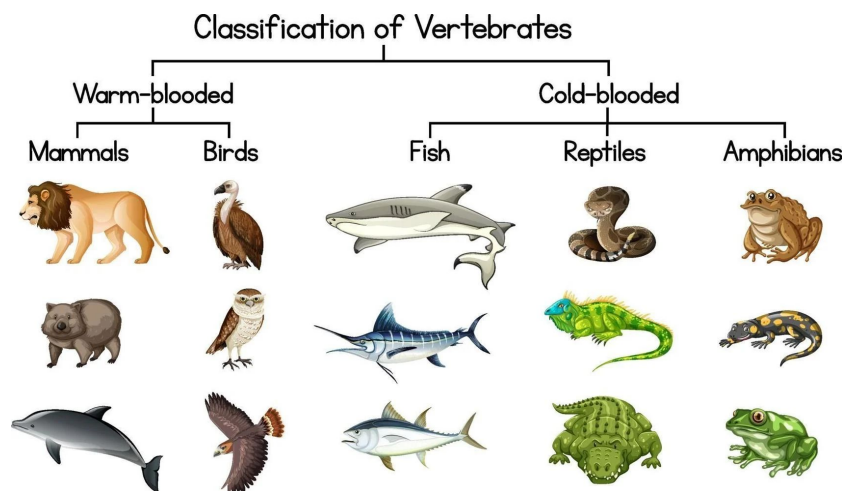
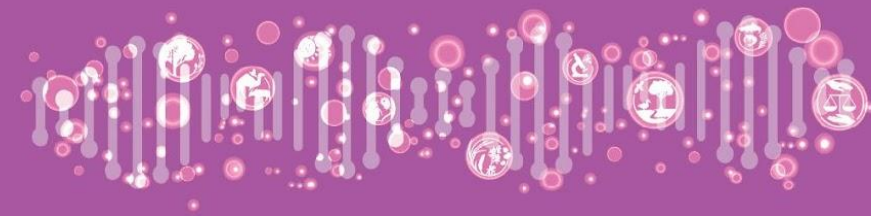
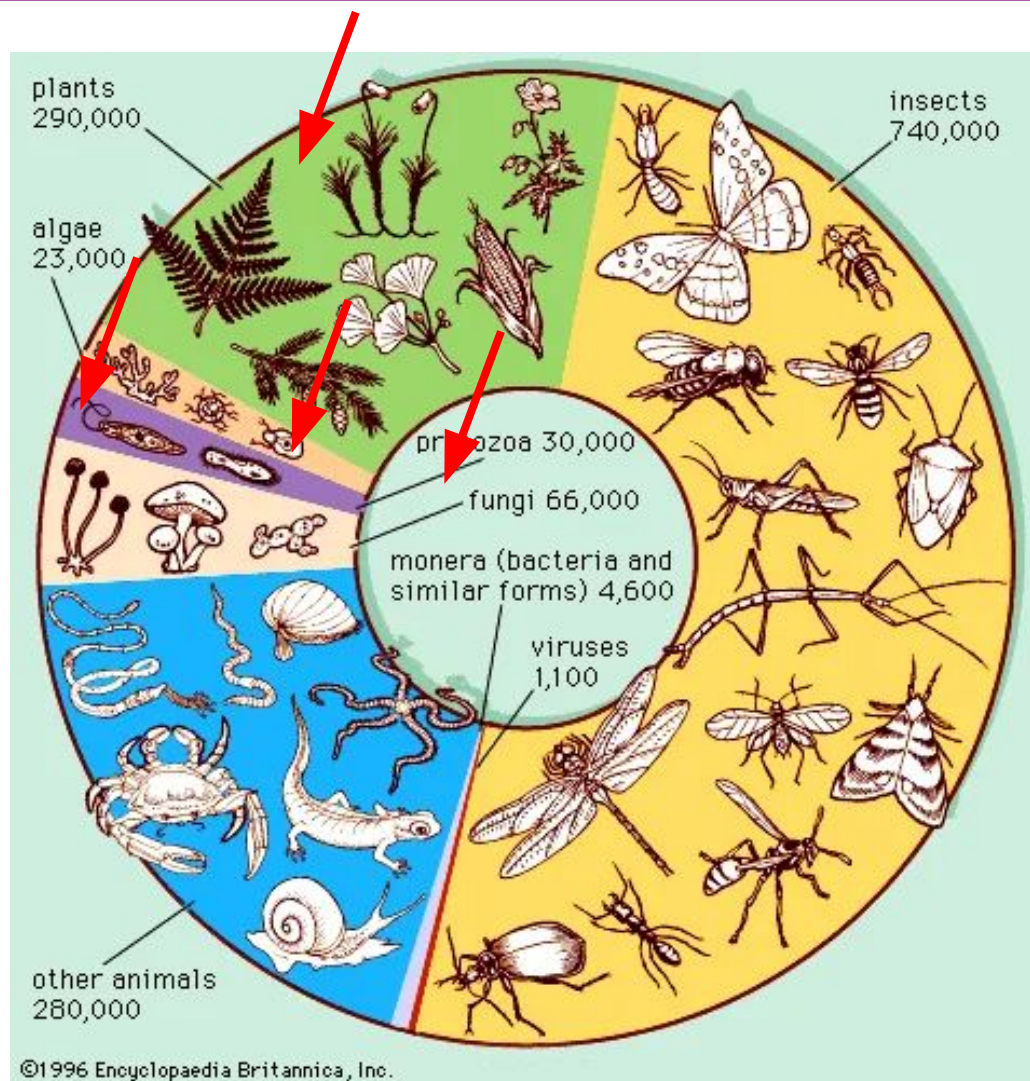
Biodiversity loss



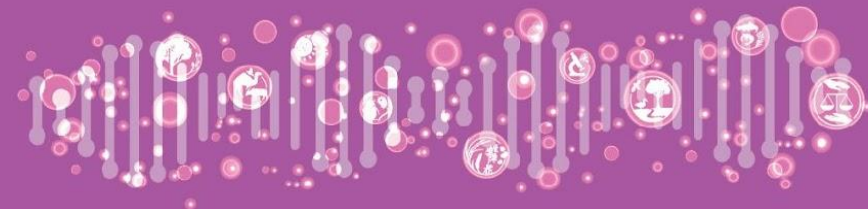
Source: National History Museum Data Portal. Data from 2016

**Africa is home
to an
unmatched and
unique
biodiversity**

**AfricaBP
project
activities will
cover plant and
animal
kingdoms**



Sources: <https://forestrypedia.com> <https://www.vecteezy.com>



Goals of African BioGenome Project (AfricaBP)

01 Coordinate

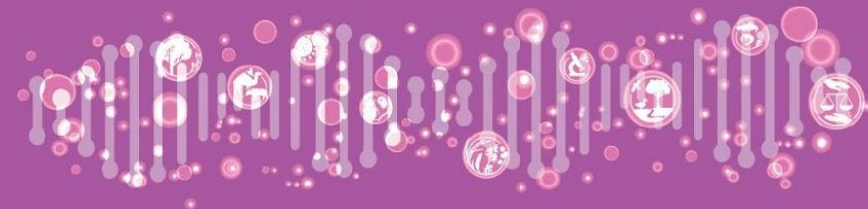
- all non-human genome sequencing initiatives (existing and emerging) in Africa.
- act as forum for the non-human space.

02 Initiate, develop, & support

- new non-human genome sequencing efforts.
- sequence > 105,000 species in Africa.
- Close the capacity gap in genomics

03 Deploy

- sequencing data to contribute to regional biobanks, Africa CDC PGI, AU-IBAR, etc
- inform policy in Africa



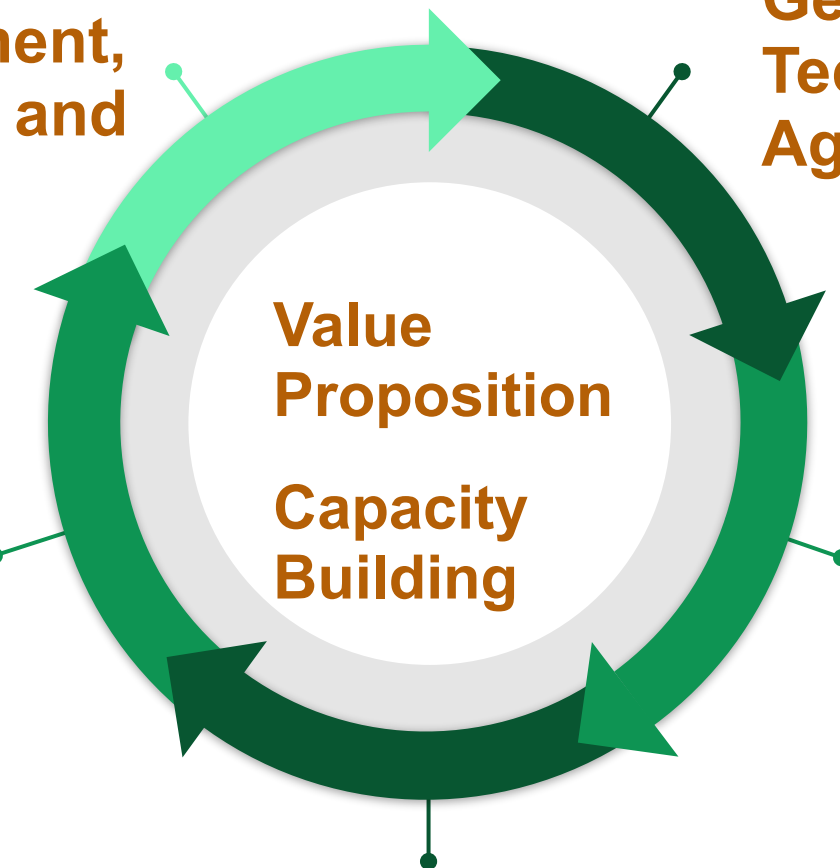
AfricaBP Grand Challenges (GCs)

**Technology Development,
Knowledge Exchange and
Industry**

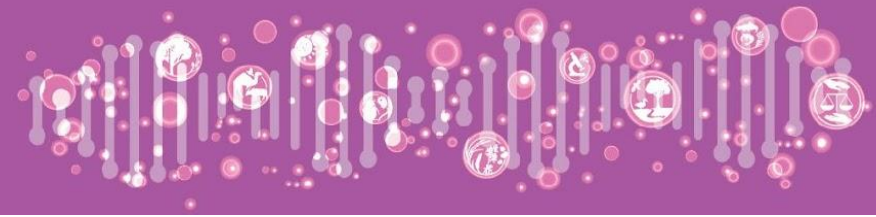
**Genomics and Bioinformatics
Technologies for the
Agri-Environment**

**Socio-economics,
Ethics and Policy
Issues**

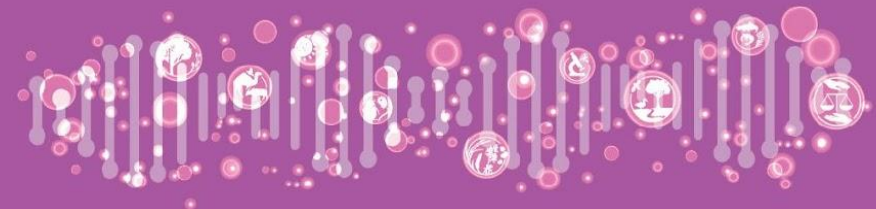
**Crops and Livestock
Improvement and
Health**



**Genomics for Conservation of
Endangered and Endemic Species**



AfricaBP key highlights (since June 2021)



AfricaBP started
in 2019,
position paper
published in
March 2022

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COMMENT | 15 March 2022

Africa: sequence 100,000 species to safeguard biodiversity

Build a major genomics resource on the continent to help breeders and conservationists.

[ThankGod Echezona Ebenezer](#), [Anne W. T. Muigai](#), [Simplice Nouala](#), [Bouabid Badaoui](#), [Mark Blaxter](#), [Alan G. Buddie](#), [Erich D. Jarvis](#), [Jonas Korlach](#), [Josiah O. Kuja](#), [Harris A. Lewin](#), [Roksana Majewska](#), [Ntanganedzeni Mapholi](#), [Suresh Maslamoney](#), [Michèle Mbo'o-Tchouawou](#), [Julian O. Osuji](#), [Ole Seehausen](#), [Oluwaseyi Shorinola](#), [Christian Keambou Tiambo](#), [Nicola Mulder](#), [Cathrine Ziyomo](#) & [Appolinaire Djikeng](#)

AfricaBP position paper was featured
in more than 100 news outlets

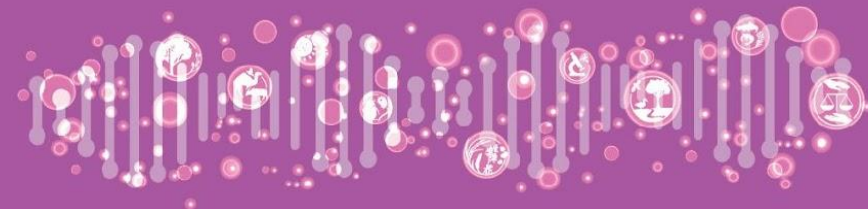
NEWS CAREERS COMMENTARY JOURNALS Science

SCIENCEINSIDER

African effort to sequence continent's biodiversity seeks \$1 billion over 10 years

Founder of African BioGenome Project says initiative will help conservation and agriculture while boosting local science capacity

15 MAR 2022 • 11:45 AM • BY MUNYARADZI MAKONI



Current profile of the African BioGenome Project

Received high-level invitations since March 2022

13-27 SEPTEMBER 2022

New York City, US

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77th Session of the UN General Assembly (UNGA 77)



FAO Food and Agriculture Organization of the United Nations

FAO homepage

COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Animals

Aquatic

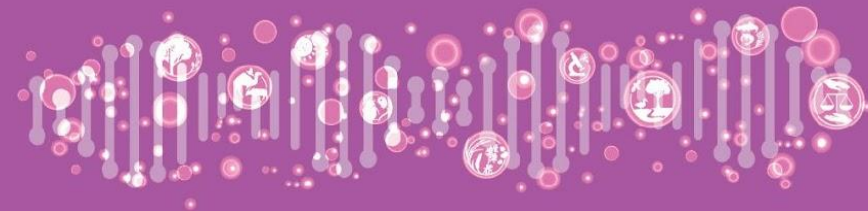
Digital sequence information

"Digital sequence information" ("DSI") plays role in environmental and biological research



Event >

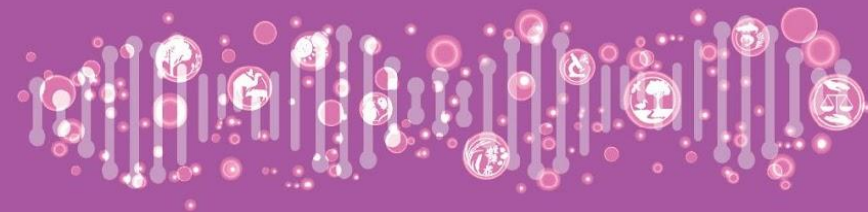
World Science Day for Peace and Development 2022



**AfricaBP currently > 120 members,
41 partners in 36 countries**



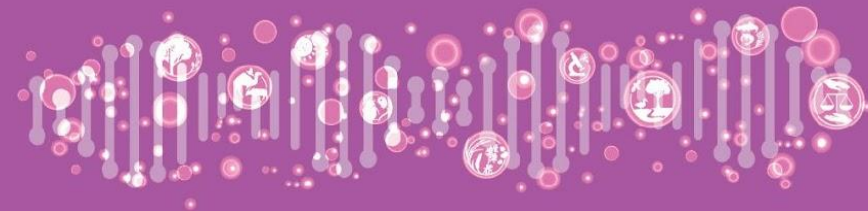
Photo credit: Karen Arnott/EMBL-EBI



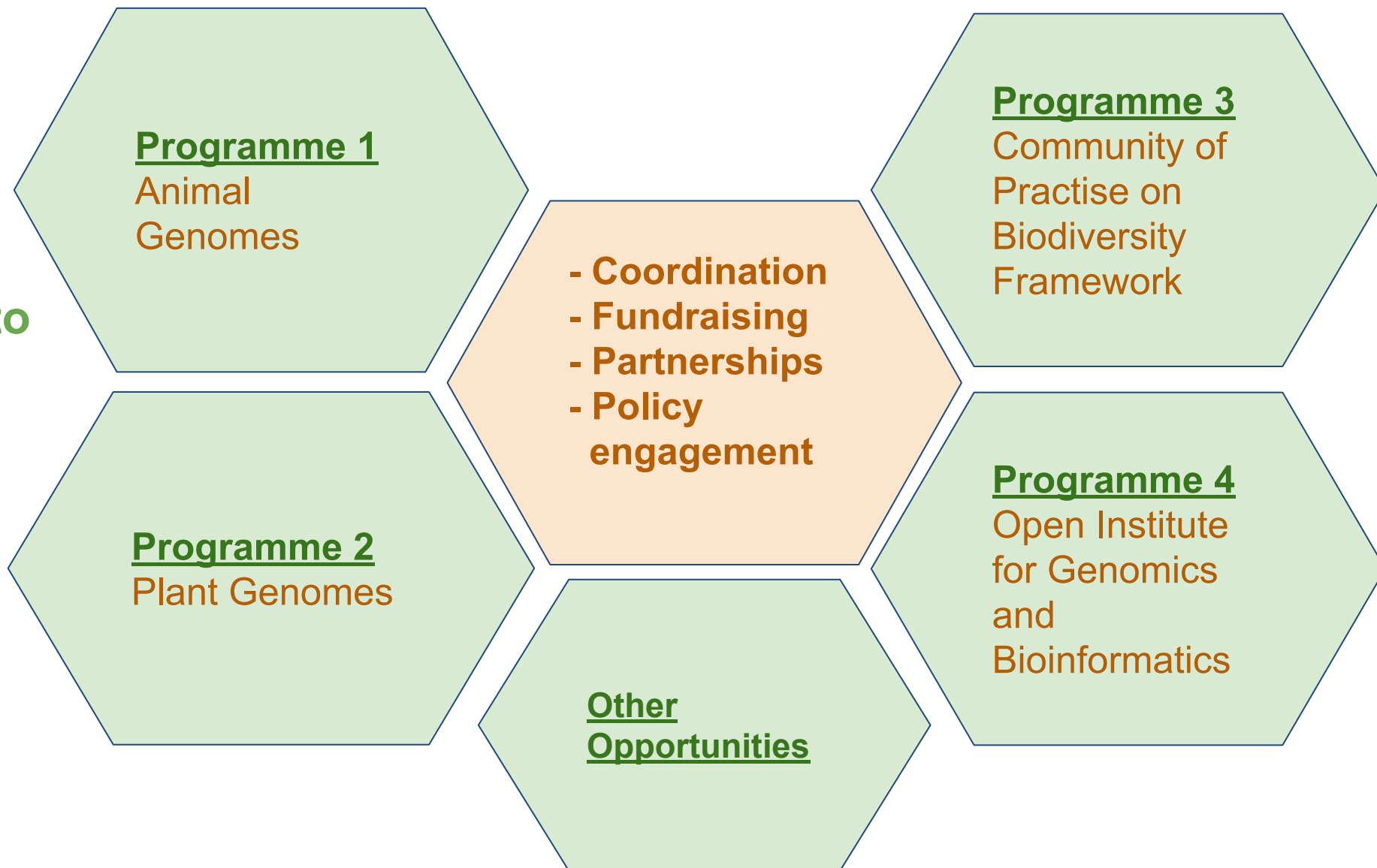
AfricaBP institutionalisation meeting

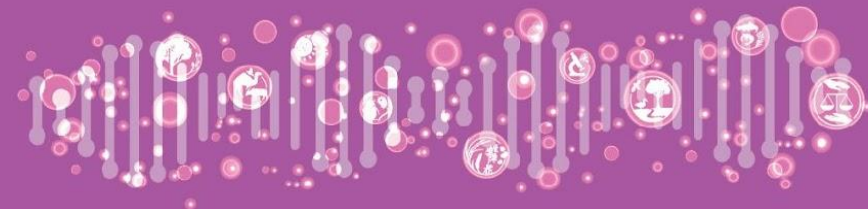
Science for Africa Foundation, University of South Africa, Illumina, Inqaba





Four programmes to address AfricaBP's grand challenges



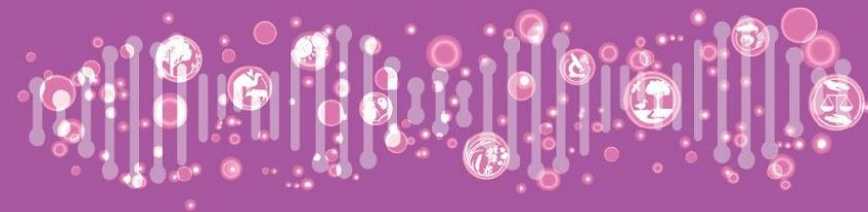


AfricaBP scientist secures award from University of South Africa (UNISA) **First direct funding to AfricaBP scientist, and from an African institution**

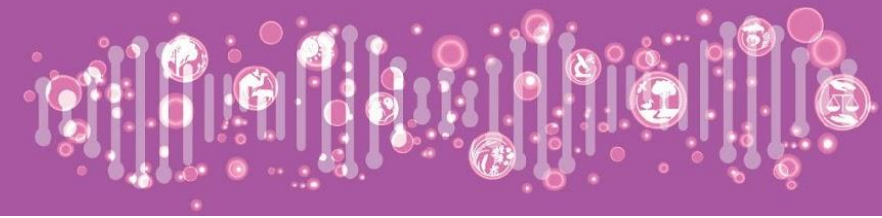
African BioGenome Project scientist secures US\$166,676 to kick-start the Nelson Mandela Genomes Initiative for Conservation of Nature



Professor Ntanganedzeni Olivia Mapholi of the University of South Africa (UNISA) and Co-Chair of the African BioGenome Project (AfricaBP) has recently received R3 000 000/US\$166,676 over three years from University of South Africa (UNISA). **This award will help launch the Nelson Mandela Genomes Initiative for Conservation of Nature, one of the programmes within AfricaBP, in honor of Nelson Mandela and his legacy of empowering the world's youth to address global challenges including nature conservation.** In keeping with the overlying mission of AfricaBP, the Nelson Mandela Genomes Initiative for Conservation of Nature will work towards the following goals:



Emerging opportunities



Programme 4: Key achievements since October 2021

AfricaBP Open Institute for Genomics and Bioinformatics

- Facilitate knowledge exchange, training, workshops and capacity building
- Developing road map document to be published in a science journal
- Partnering with Wellcome Connecting Science to deliver 1st Biodiversity Genomics course in Future Learn

1st AfricaBP Open Institute for Genomics and Bioinformatics Workshop on Endemic African Species

26-27 MAY 2022
15:00 GMT+2

www.africanbiogenome.org

To sign up, please visit:
<https://tinyurl.com/africabpworkshop2022>

WHAT IS IT ABOUT?
This two-day workshop aims to explore the journey of the first African endemic species sequenced by Inqaba biotec in collaboration with the Vertebrate Genomes Project (VGP) under the African BioGenome Project (AfricaBP) umbrella. Moreover this workshop aims to build capacity and empower African institutions and scientists in genomics and bioinformatic analysis.

WHO CAN ATTEND?
Any AfricaBP members who want to learn sample collections, sequencing and assembly of the first African endemic species within the framework of AfricaBP.

SPEAKERS

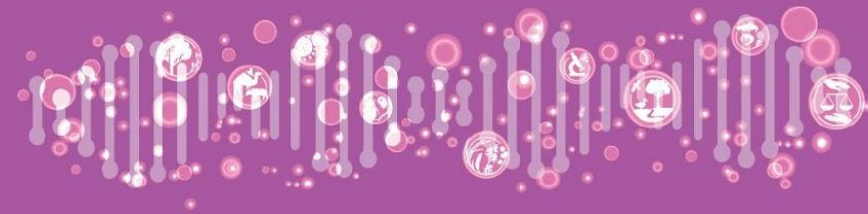
 Verena Ras H3ABioNet, University of Cape Town, South Africa	 Suresh Maslamoney University of Cape Town, South Africa	 Nidhal Ghannam Radboud University of Nijmegen, The Netherlands	 Giulio Formenti Vertebrate Genomes Project (VGP), Rockefeller University, USA	 Charlotte Ndlovu University of Limpopo, Algeria	 Aclaim Molla Inqaba Biotech, South Africa
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WORKSHOP PARTNERS

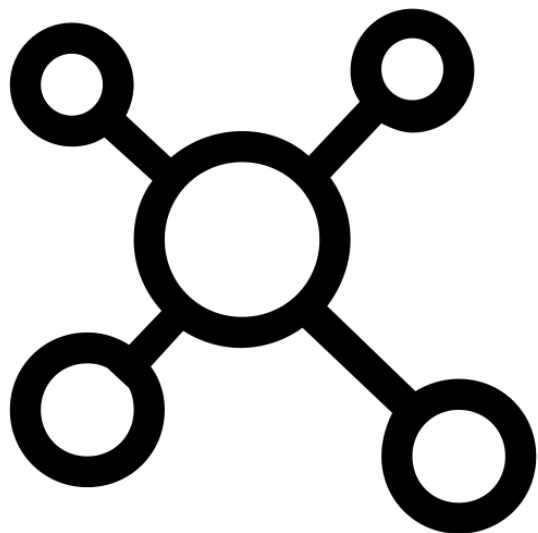
Inqaba biotec
Inqaba Biotech

VGP
Vertebrate Genomes Project
A PARTNER OF THE AFRICAN BIOGENOME PROJECT

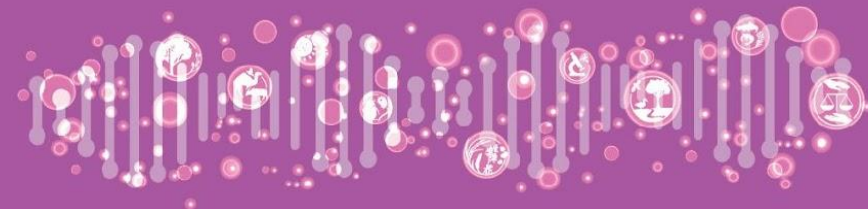
H3ABioNet
H3ABioNet



Capacity to generate & use genomic data differs between developed nations & Africa So, how can national institutions, African governments, and international partners help?

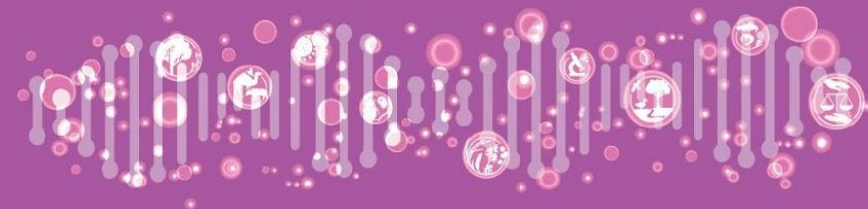


- Support the initiation of biodiversity genomics affiliate programme for young and established AfricaBP scientists
- Support the initiation of AfricaBP Early Career Fellowships in biodiversity genomics to close capacity gap
 - 60 Fellows per year over 10-year period
- Support in transforming AfricaBP Open Institute to regional centres of excellence; hub and spoke model.



Capacity to generate & use genomic data differs between developed nations & Africa So, what is AfricaBP doing or will continue to do to engage this conversation?

- Promote on-the-ground sequencing to build local capacity & maximise compliance
- Promote open access in compliance with national framework & requirements
- Configure databases and data to be accessible by scientists in Africa. Some barriers:
 - Language, Internet access, limited availability of African endemic species in global databases
 - Africa's non-representation in International Nucleotide Sequence Database Collaboration (INSDC) advisory committee
- Sample custodians should be given similar credits as sample submitters on INSDC
- Engage African agencies, academic & national institutions to own & invest in AfricaBP

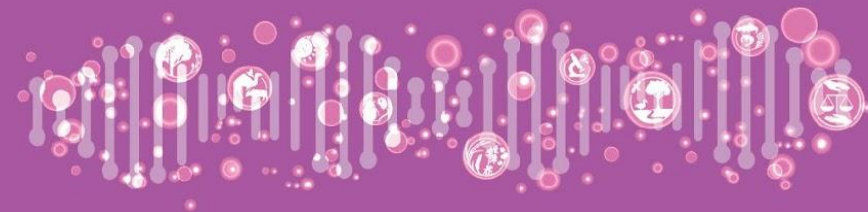


Acknowledgements

Members of the AfricaBP committees....A village

- [Anne Muigai](#)
- [Cathrine Ziyomo](#)
- [Julian Osuji](#)
- [Ntanganedzeni Mapholi](#)
- [ThankGod Ebenezer](#)
- [Appolinaire Djikeng](#)
- [Isidore Houaga](#)
- [Bouabid Badaoui](#)
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- [Samuel Eziuzor](#)
- [Charlotte Ndiribe](#)
- Harry Akligoh
- [Cyprien Ndikuryayo](#)
- Zahra Mungloo-Dilmohamud

....and many more



Thank you for listening