



**CIBIO**

***Centro de Investigação em  
Biodiversidade e Recursos  
Genéticos (2003)***

**Universidade do Porto**

Who are we?



# InBIO

RESEARCH NETWORK

## Biodiversity and Evolutionary Biology





## Mission

**Advance biodiversity science and use it for the conservation and management of biodiversity**

**Advance Scientific Knowledge**

**Knowledge and Technology Transfer**

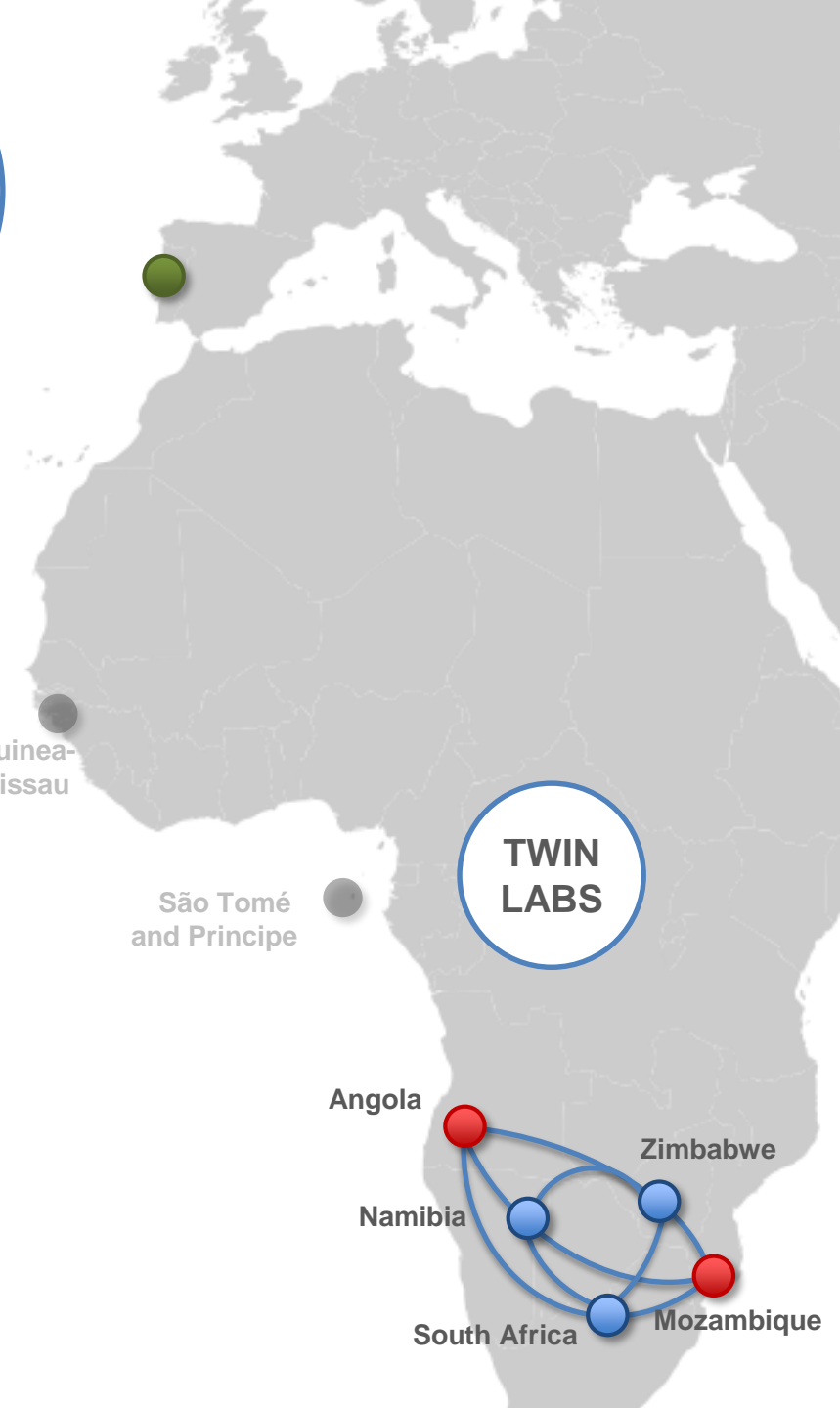


**Internationalization**

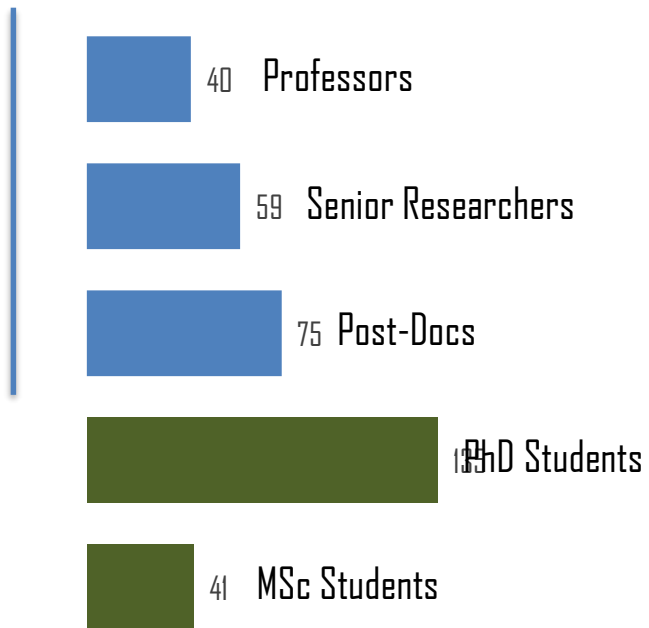
**Training School**

**Communication**

# Organization



## PhD Researchers



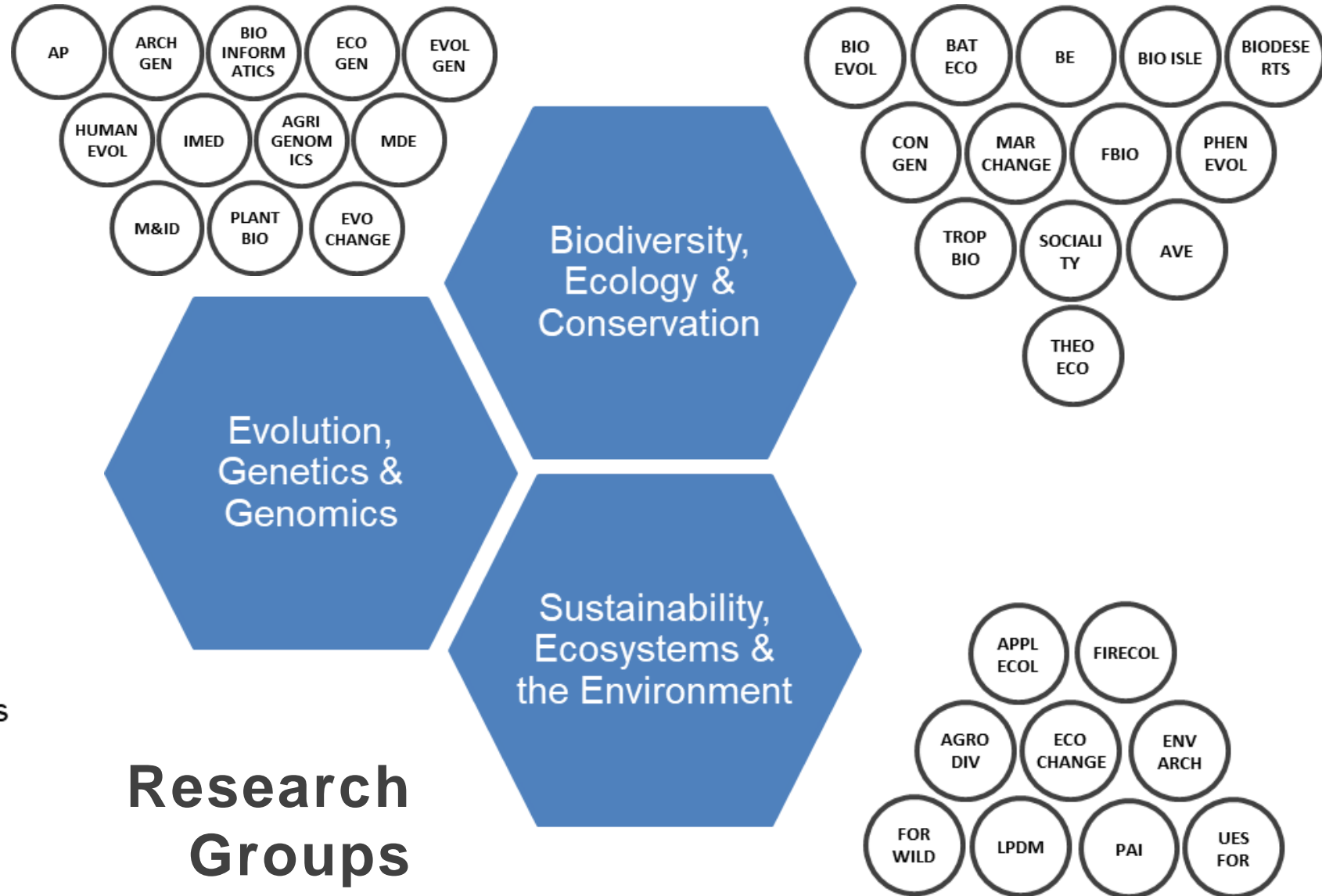
Invited **Chairs** co-funded by companies

ERA **Chairs** ENVMETAGEN/TROPIBIO

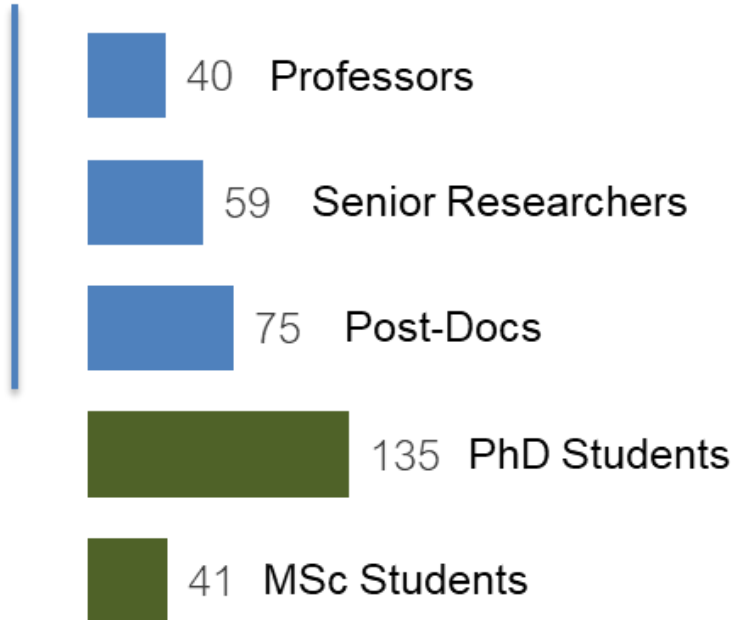
UNESCO **Chair** Life on Land

ERC Consolidator Grant

# From Genes to Landscapes

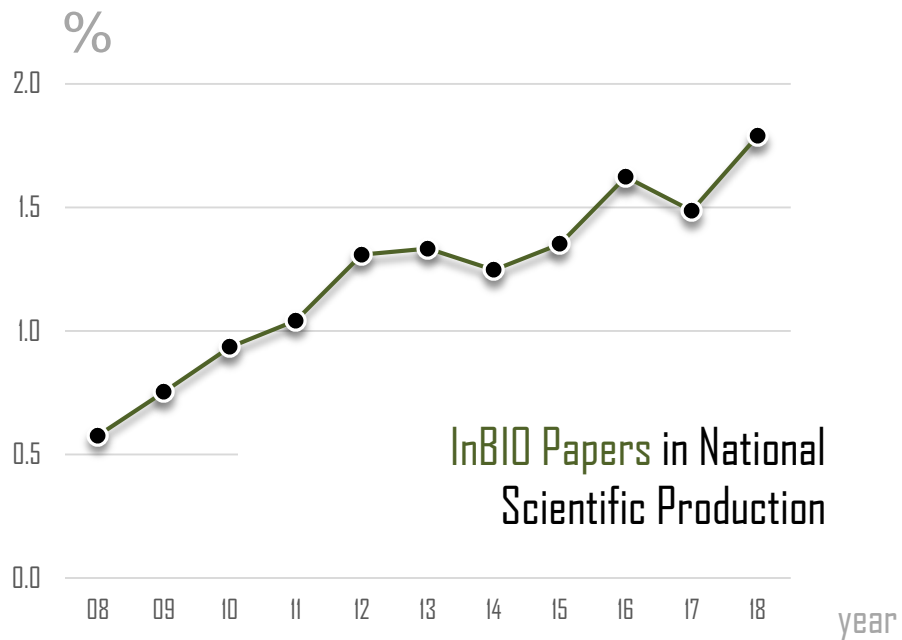
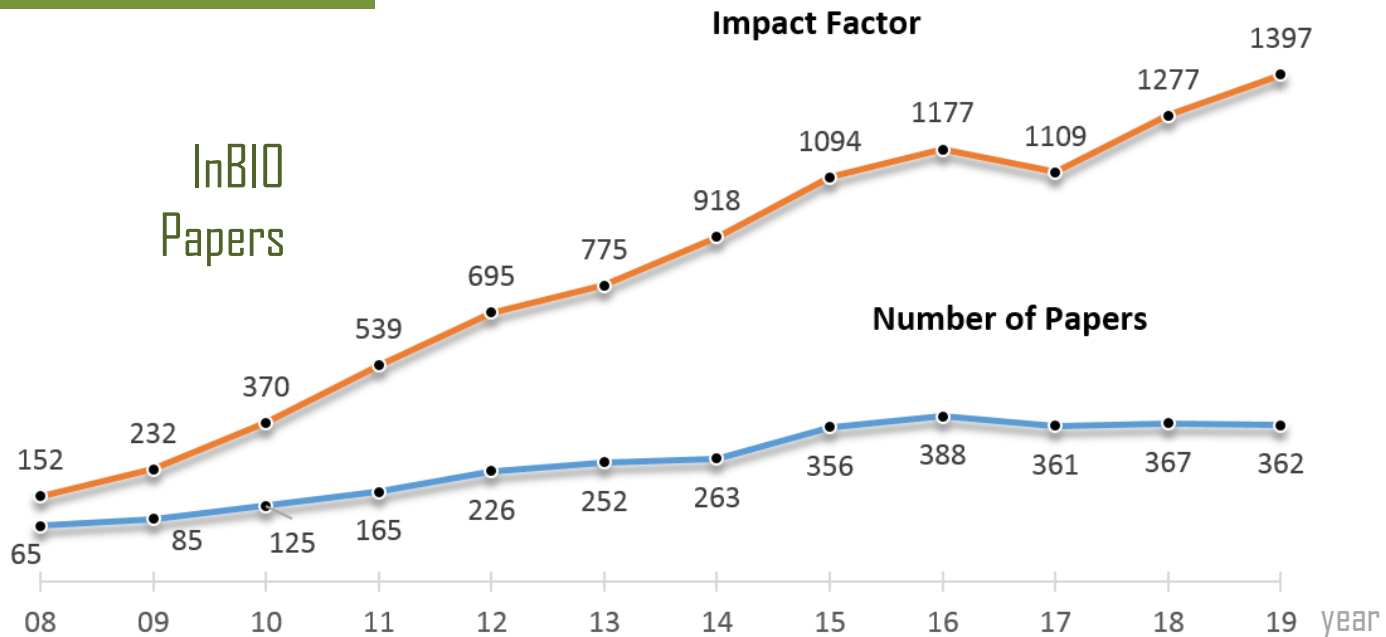


## PhD Researchers

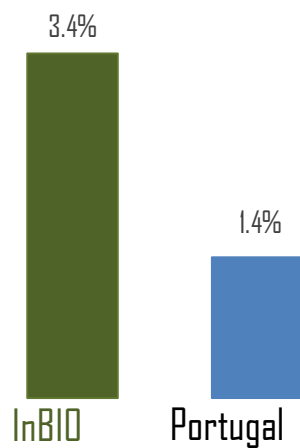


## Research Groups

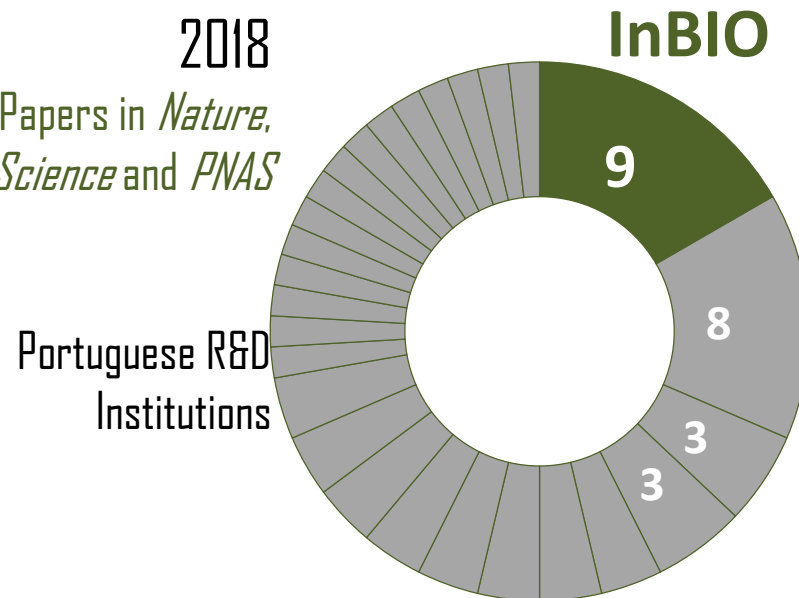
# Articles Metrics



## 2017 Papers Top 1%



## 2018 Papers in *Nature*, *Science* and *PNAS*



Articles Highlights

Articles Highlights
Networks of global bird invasion altered by local resident traits
Wildfire trade is a major pathway for introduction of invasive species worldwide. However, how exactly wildfire trade influences invasion risk beyond the transportation of individuals to novel areas, remains unclear. We analyze the global network of wild-escape birds from 1995 to 2013 as reported by CITES Convention on International Trade in Endangered Species of Wild Fauna and Flora. We found that before the European Union ban on imports of wild-captive birds, declines in 2005 invasion were closely associated with numbers of imported birds, diversity of import sources, and degree of network centrality of importer countries. After the ban, rates of global wild-trade declined sharply. However, how trade routes emerged, primarily toward the Nearctic, Afrotropic, and Indo-Malay regions. Although regional bans can curtail invasion risk globally, to be fully effective and prevent receding of trade flows, new trade routes must be global.

Unravelling biodiversity, evolution and threats to conservation in the Sahara-Sahel
Emergence of Pathogenicity in Logaviruses: Evolution from Pre-existing Nonpathogenic Strains or through a Species Jump?
Genetic Architecture of Skin and Eye Color in an African-European Admixed Population

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Ocean-wide tracking of pelagic sharks reveals extent of overlap with longline fishing hotspots
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Science Advances | Research Article
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# International Collaborations



# TwinLabs



CIBIO TWINLABS PROGRAM

SOUTHERN AFRICA BIODIVERSITY NETWORK

UNESCO CHAIR 'LIFE ON LAND'



ANGOLA

NAMIBIA

ZIMBABWE

SOUTH AFRICA

MOÇAMBIQUE

CAPACITY BUILDING FOR A SUSTAINABLE FUTURE



MSc

Angola  
& Namibia

In  
situ

MBGE

20 Students  
every year

## PhD Programs

# Biodiv

- 125 current students
- 20 countries

**In 2018**

12 PhD scholarships

- 74 applications
- 11 countries, 3 continents

FCT Programmatic Funding  
2019-2022

**32 scholarships**

Southern  
Africa

Supervised &  
Concluded (last 5 years)

MSc 291 PhD 77

# SusFOR

- 24 current students
- 30% foreign students

**In 2018**

8 PhD scholarships

- 26 applications
- 4 countries

FCT Programmatic Funding  
2019-2022

**12 scholarships**



## Communication

in/between  
groups **Journal clubs**

weekly **Senior/student  
seminars**

anytime **Casual, guest &  
inaugural seminars**

anytime **Workshops & Courses**

annual **TiBE Conference**

# InBIO events



**TiBE**

Trends in  
Biodiversity &  
Evolution



### Student Seminar in Biodiversity and Evolution

A GENOME-WIDE PERSPECTIVE ON THE EVOLUTIONARY TRAJECTORY OF WOLVES IN HUMAN-DOMINATED LANDSCAPES  
Diana Lobo, CIBIO-InBIO/UP



June 8, 2018 - 15h30 | CIBIO-InBIO's Auditorium, Campus de Vairão



### Casual Seminar in Biodiversity and Evolution

TURNING BACK THE CLOCK FOR CHEETAHS IN SOUTHERN AFRICA: A METAPOPULATION APPROACH FOR CONSERVATION  
Vincent van der Merwe, Endangered Wildlife Trust



July 17, 2018 - 15h00 | CIBIO-InBIO's Auditorium, Campus de Vairão



### Seminar in Biodiversity and Evolution

NEAR EASTERN ANCIENT GENOMICS AND INSIGHTS INTO CATTLE AND GOAT PREHISTORY  
Dan Bradley, Chair of Population Genetics, Trinity College Dublin



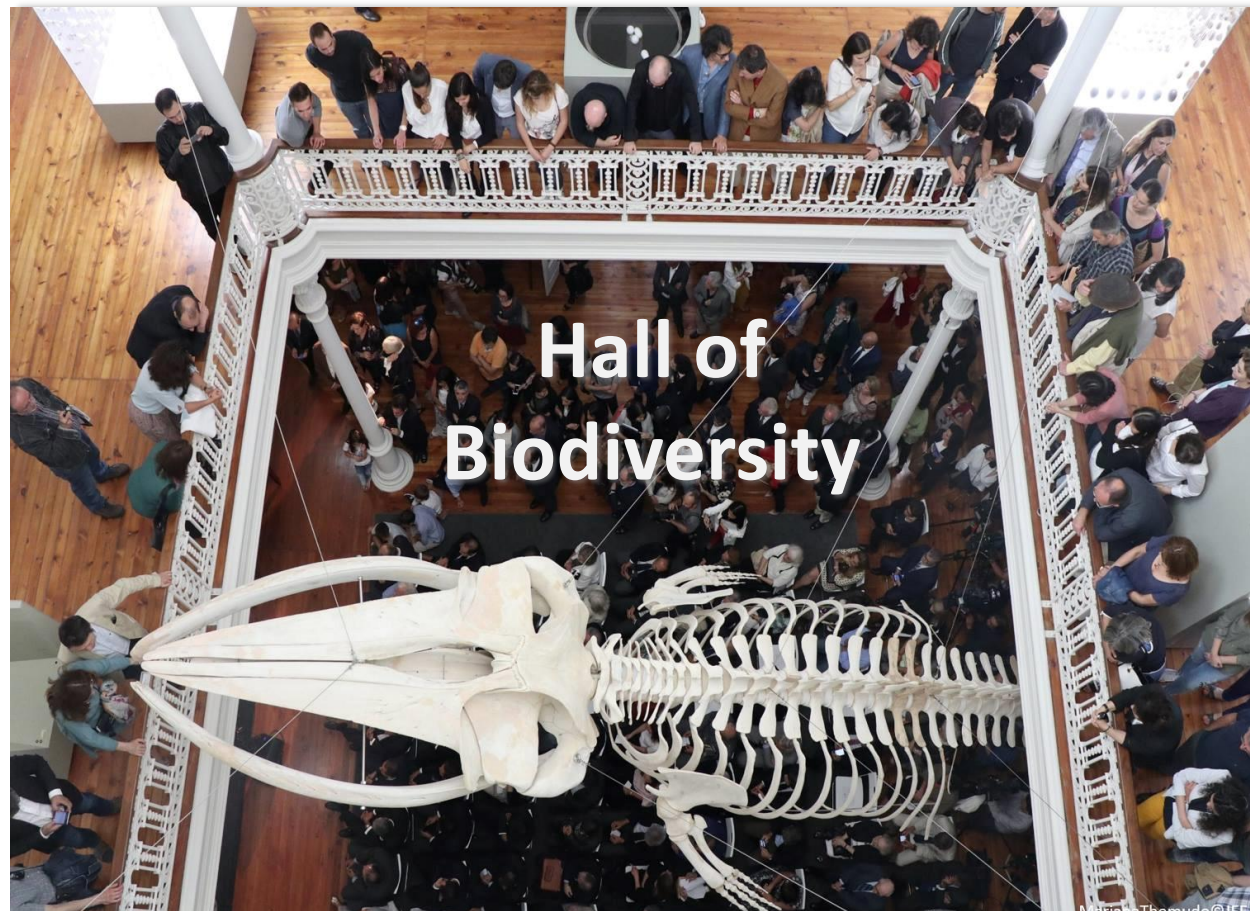
July 06, 2018 - 16h00 | CIBIO-InBIO's Auditorium, Campus de Vairão

# Partnership with Museums

Natural History & Science Museum

**MHNC-UP | U. PORTO**

CIÊNCIA VIVA



**SERRALVES**  
360°

Public  
awareness  
in biodiversity

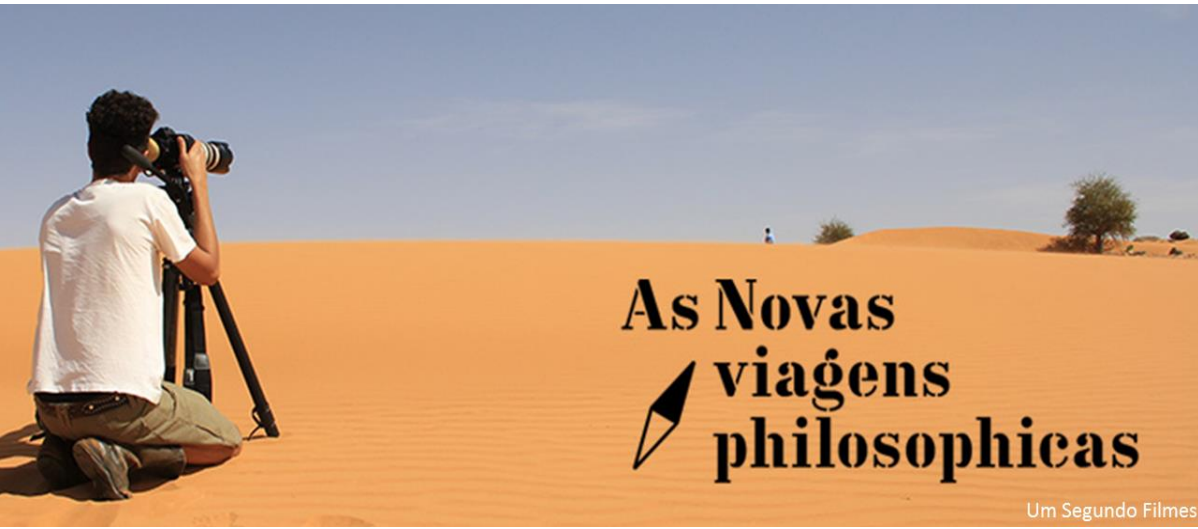


**BIO  
BLITZ**  
descobre a natureza  
do Parque de Serralves

**CAFÉ com  
CIÊNCIA**

há **VIDA** no  
**PARQUE**

## Documentaries



### Voa uma nova espécie de borboleta em Portugal

TERESA SOFIA SERAFIM 02/02/2017 - 08:31  
Foi encontrada, por acaso, em 2012, perto de Pombal. Desde então, já se avistaram nove exemplares. Sabe-se que é uma nova espécie no país, mas não se sabe exactamente de onde veio.



Exemplar da borboleta *Borkhausenia crinnodes* apanhado em Portugal MARTIN F.V. CORLEY

**TÓPICOS >**  
Biologia  
Insetos

Para os lados de Pombal, no distrito de Leiria, voava uma borboleta nunca antes vista por ali. Não se sabia o seu nome nem de onde vinha. Foi depois levada para um laboratório, onde um grupo de cientistas tentou decifrar a sua identidade. Agora, sabe-se que essa borboleta pode ser a *Borkhausenia*

Edição Lisboa • Ano XXIX • n.º 10.329 • 1.20€ • Quarta-feira, 1 de Agosto de 2018 • Director: David Diniz

### Genética A lebre-ibérica guarda um "fantasma" do passado

Cláudia, 27

Dos peixes do lago Niassa aos lobos das Astúrias e aos anfíbios do Brasil

Para os lados de Pombal, no distrito de Leiria, voava uma borboleta nunca antes vista por ali. Não se sabia o seu nome nem de onde vinha. Foi depois levada para um laboratório, onde um grupo de cientistas tentou decifrar a sua identidade. Agora, sabe-se que essa borboleta pode ser a *Borkhausenia*

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## NEWS

Home Video World UK Business Tech Science Stories Entertainment & Arts

### Science & Environment

#### Two studies find one gene for red beaks and feathers

By Jonathan Webb  
Science reporter, BBC News

© 20 May 2016

Share



EDIÇÃO ESPECIAL

NATIONAL GEOGRAPHIC

# Cães E Gatos

Celebração dos nossos melhores amigos

A mente do seu animal de estimação  
A evolução dos cães e dos gatos

## Services to Society and Science-Policy Interface

Molecular  
& Genetic



Biodiversity &  
Ecosystems

Management  
& Policy

## Start-ups

# ElectricBlue

tools for environmental monitoring and biologging

 **Movetech**  
Telemetry

## Invited Chairs co-funded by companies



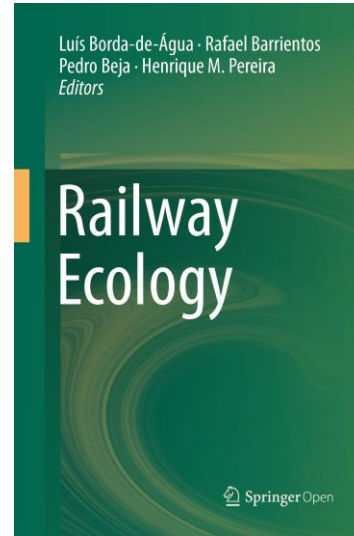
Biodiversity  
Conservation  
and Management



Fire prevention and  
post-fire management



Mitigation of impact of  
large infrastructures



Molecular Tools  
in Wildlife  
Management



A new opportunity

# EnvMetaGen: Capacity Building at InBIO for Research and Innovation Using Environmental Metagenomics

Expand the research and innovation potential of InBIO, by strengthening the research potential of human resources, lab facilities and next-generation genome sequencing equipment funded by a FP7 CAPACITIES project, and supporting an emerging research line in environmental metagenomics for applications in biodiversity conservation, invasive species control, ecosystem services assessment, and environmental (bio)monitoring.

<https://inbio-envmetagen.pt/>



## Project information

### EnvMetaGen

Grant agreement ID: 668981

[Project website](#)

Status

Ongoing project

Start date

1 September 2015

End date

31 August 2020

Funded under:

H2020-EU.4.c.

Overall budget:

€ 2 477 046,25

EU contribution

€ 2 228 000



Coordinated by:

ICETA INSTITUTO DE CIENCIAS,  
TECNOLOGIAS E AGROAMBIENTE DA  
UNIVERSIDADE DO PORTO

 Portugal





## Objectives

**Build a new research team in a frontier field**

**Strengthen International networking**

**Deploy a reference eDNA lab**

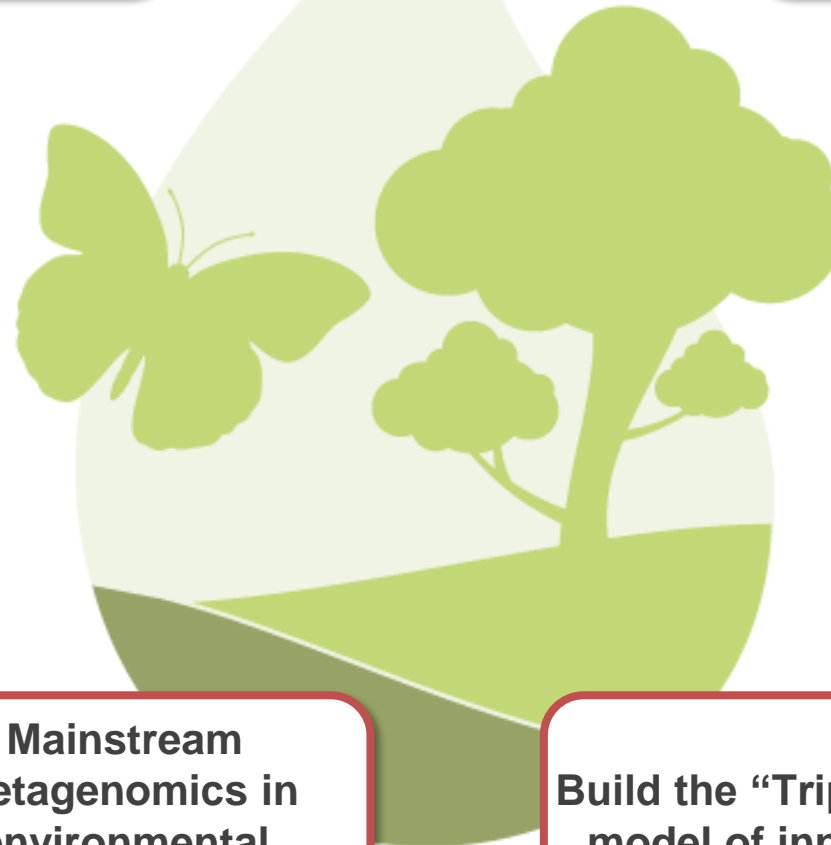
**Enhance capacity to access funding opportunities**

**Align research with societal challenges**

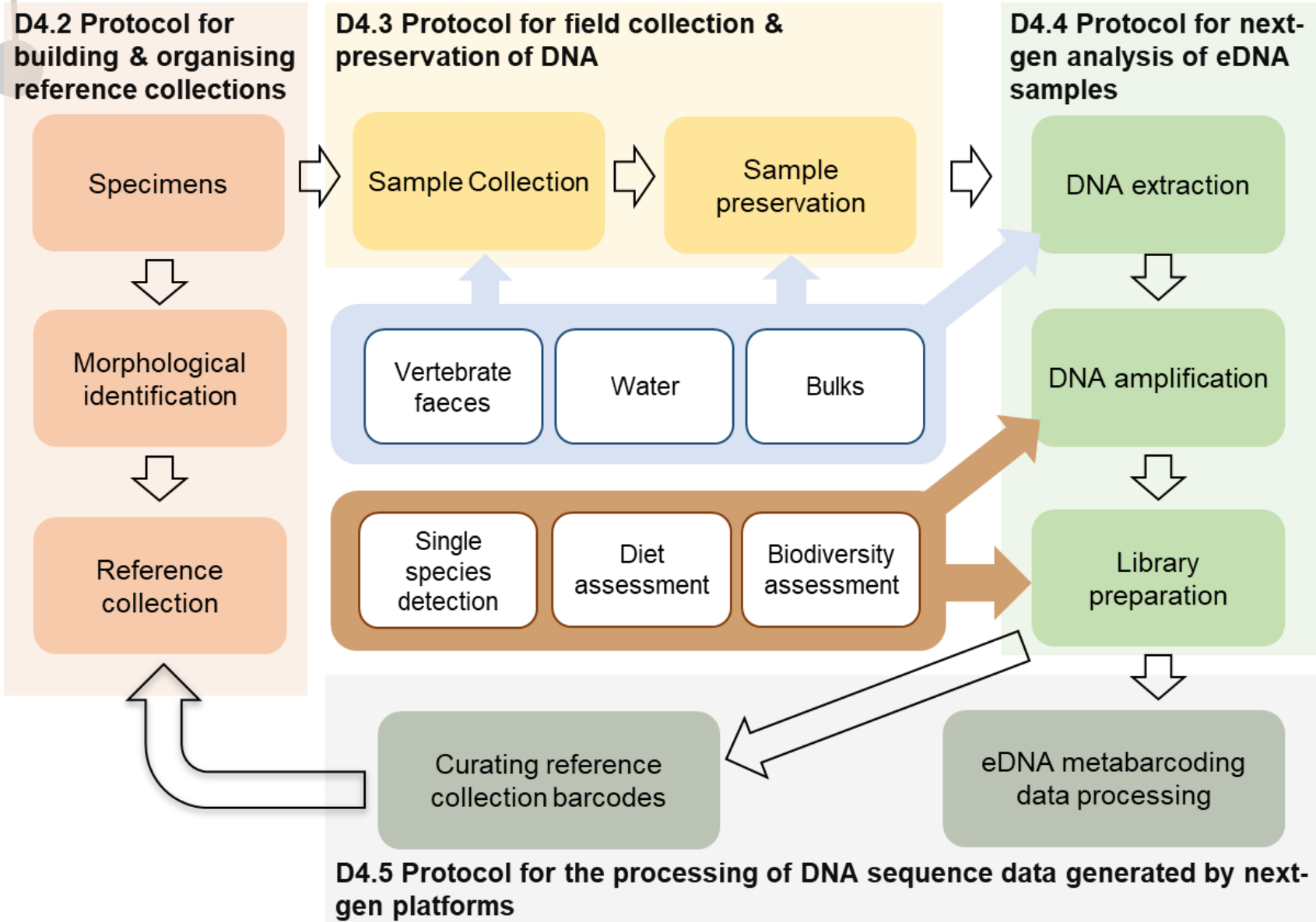
**Maximize impact**

**Mainstream metagenomics in environmental management**

**Build the “Triple Helix” model of innovation**

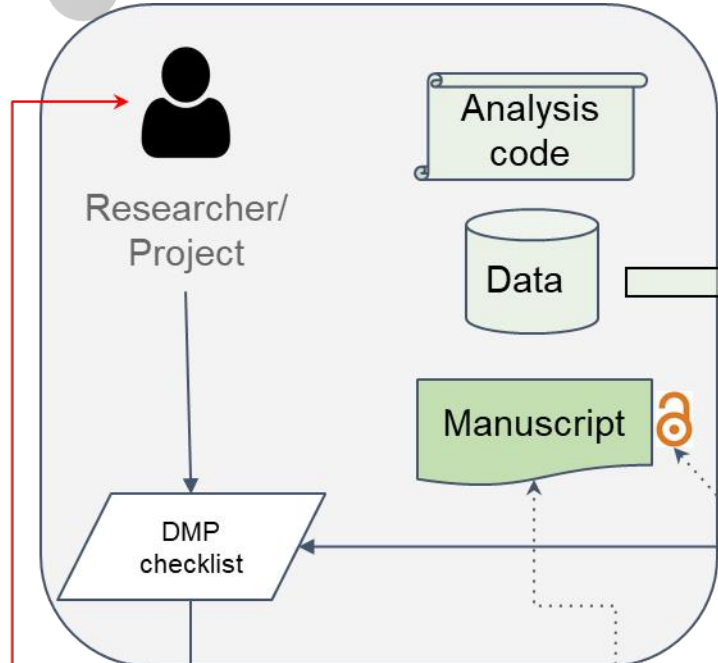


# Deploying a reference eDNA Lab



# Improving data management and open access

**FAIR Data Principles**  
Findable, Accessible, Interoperable, Reusable  
**Reproducibility**



**DMP Compliance Check**

**EnvMetaGen Web Portal**

**BioStudies.**  
Link per project

- One page per project  
With links to all
- Archived data
  - Analysis code
  - Non-structured data

## Archives for code/scripts



**Data Archives**  
**ENA**  
European Nucleotide Archive

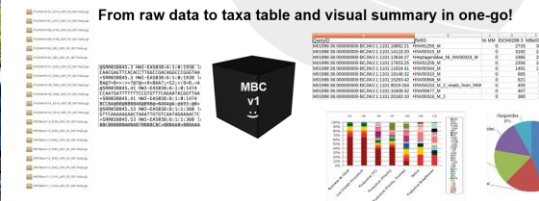
**GBIF**  
Global Biodiversity Information Facility

**NCBI GenBank**

**BARCODE OF LIFE DATA SYSTEMS**  
Advancing biodiversity science through DNA-based species identification.



Taking advantage of the enhanced profile of InBIO fostered by EnvMetaGen to reinforce participation in European and international networks and infrastructures.



### Portugal joins LifeWatch ERIC

Photo credit: César Garcia Portugal is the most recent member of LifeWatch ERIC. LifeWatch Portugal is managed at a national level by PORBIOTA - e-Infrastructure Portuguese Information and Research in Biodiversity, led by CIBIO-InBIO, the Research Centre in Biodiversity and Genetic Resources. The integration into LifeWatch reinforces and projects ...

<https://www.lifewatch.eu/web/guest/all-news>

Read More →



**COST Action CA15219** @DNAquaNet · Dec 17, 2018  
Good progress and clear roadmap at #WG3invert workshop of @DNAquaNet today! Experiments on #standardisation of #metabarcoding ahead! Thx @alpineedna @rosieblackman @ElviraMaechler for leading this and @EnvMetaGen @CIBIO\_InBIO for hosting us. @COSTprogramme

You and 9 others

9 18

## Partnering with international organisations and leading scientists to organise in-house training schools and advanced courses



### GENOMICS, TRANSCRIPTOMICS AND METAGENOMICS TOOLS AND RESOURCES FOR BIOLOGY RESEARCH

EnvMetagen / EMBL-EBI SPRING SCHOOL  
University of Porto, Faculty of Sciences, May 7-9, 2019



#### The 7th DNA Metabarcoding Spring School

May 1-5, 2017 | Porto, Portugal



#### DNA metabarcoding

First introduction lecture by Pierre Taberlet at the DNA @Metabarcoding spring school in #Porto

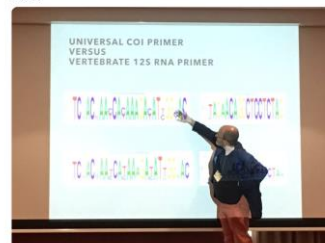


01:42 - 1 de mai de 2017 de Porto, Portugal



#### Guille Peguero

@EricCoissac dissecting what makes a DNA barcode good for #DNAmetabarcoding at the spring school on @Metabarcoding Porto 2017



06:52 - 1 de mai de 2017



#### Jan Klecka

It's time to learn-:) I've just started my journey to @Metabarcoding Spring School at Porto!

#### Jordan Cuff

Porto-bound for @Metabarcoding Spring School! Very excited to learn, discuss, and meet fellow metabarcoders!

#### Guille Peguero

And finally heading to Porto to attend the spring school on DNA @Metabarcoding 🦋🦋🦋🦋🦋🦋

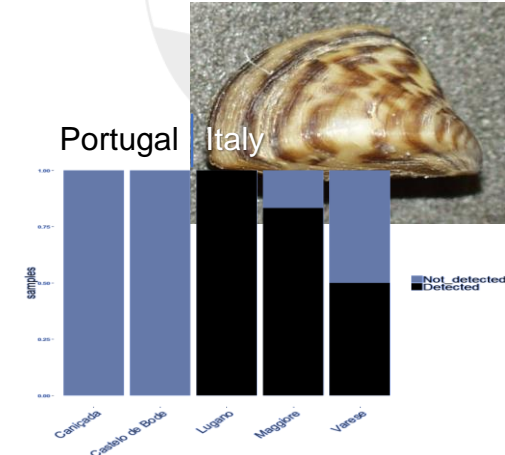


# Mainstreaming metagenomics into applications

Developing pilot studies with the public and private sectors to transfer knowledge and produce new applications

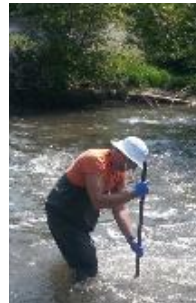
Public Administration

Private corporations



Rapid molecular assessment of invasive species in hydroelectric reservoirs

## Optimising molecular methods for freshwater biomonitoring under the Water Framework Directive



"MULTI-SPECIES" SAMPLES

EXTRACTION

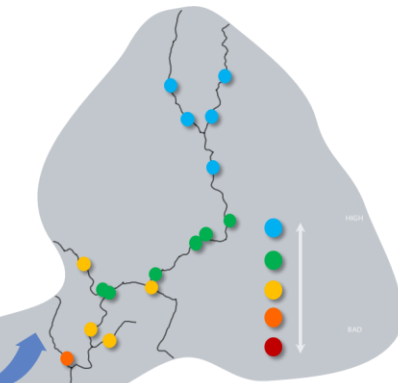
HIGH-THROUGHPUT SEQUENCING

TAXA IDENTIFICATION

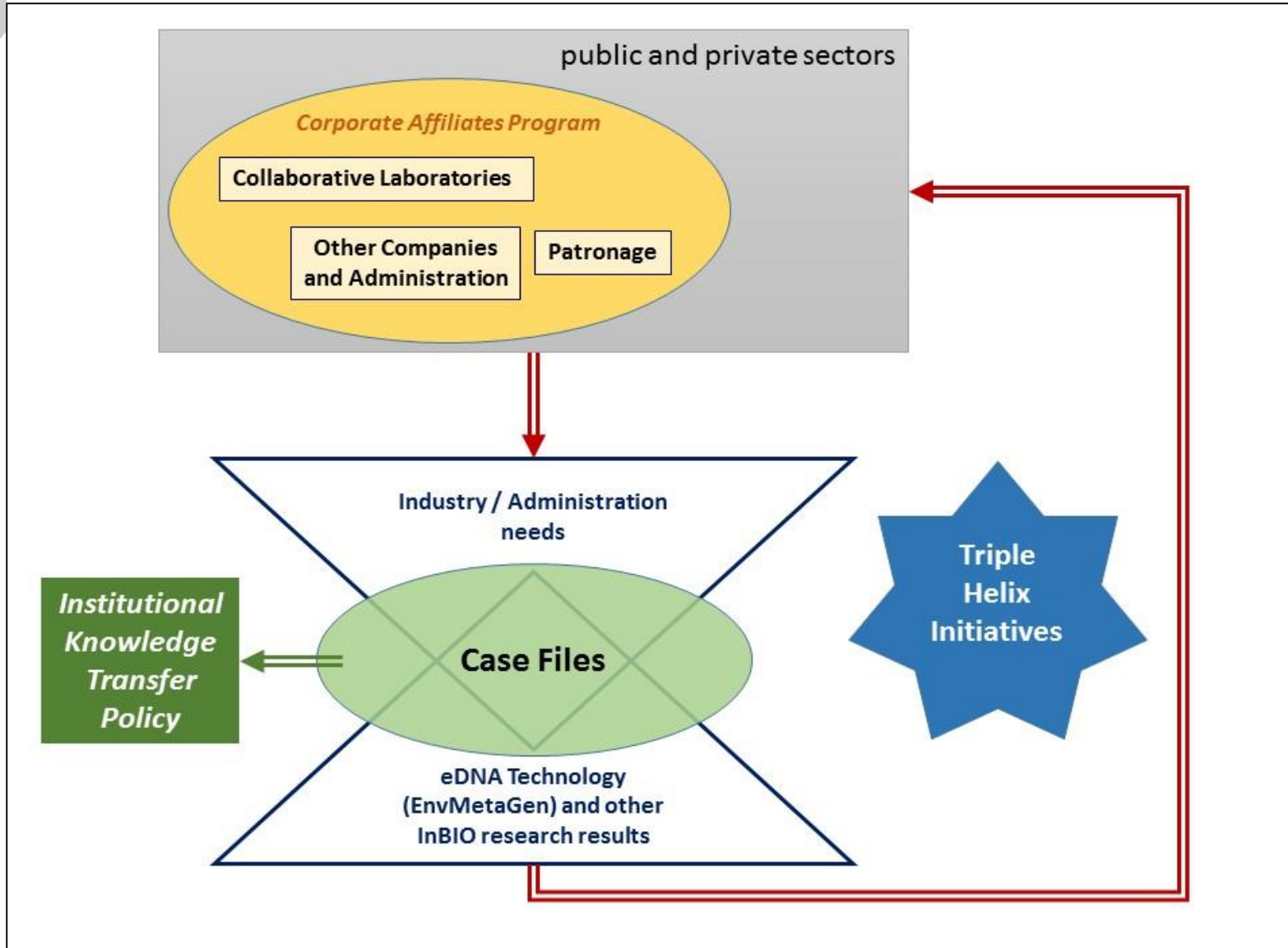
PCR AMPLIFICATION

BIOINFORMATIC DATA PROCESSING

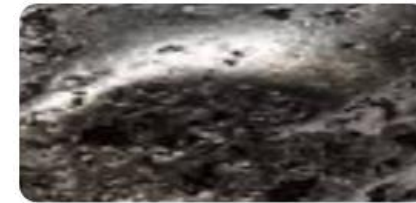
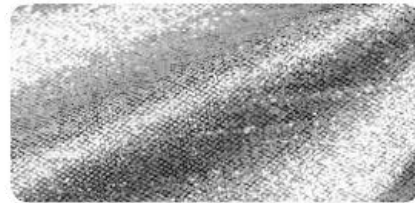
ECOLOGICAL ANALYSIS



# Enhancing the knowledge transfer strategy



**The Affiliates Program:** A new setting for learning, collaborating and networking with researchers and partners



**Bronze**

*Networking*

**Silver**

*Services*

**Gold**

*R&D*

**Platinum**

*Mini-lab*

Newsletters / Job board / Early access to R&D results / Reserved seats at existing training courses / Specific in-house training (ex. Sustainability) / Discounts on Services / Networking Events: Workshops, Exclusive Seminars, etc

**Common Benefits for Affiliates**

**Commitment**

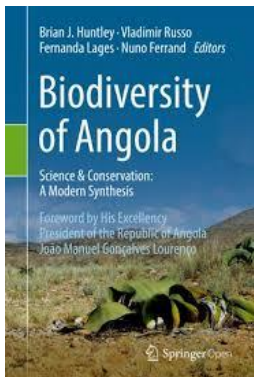
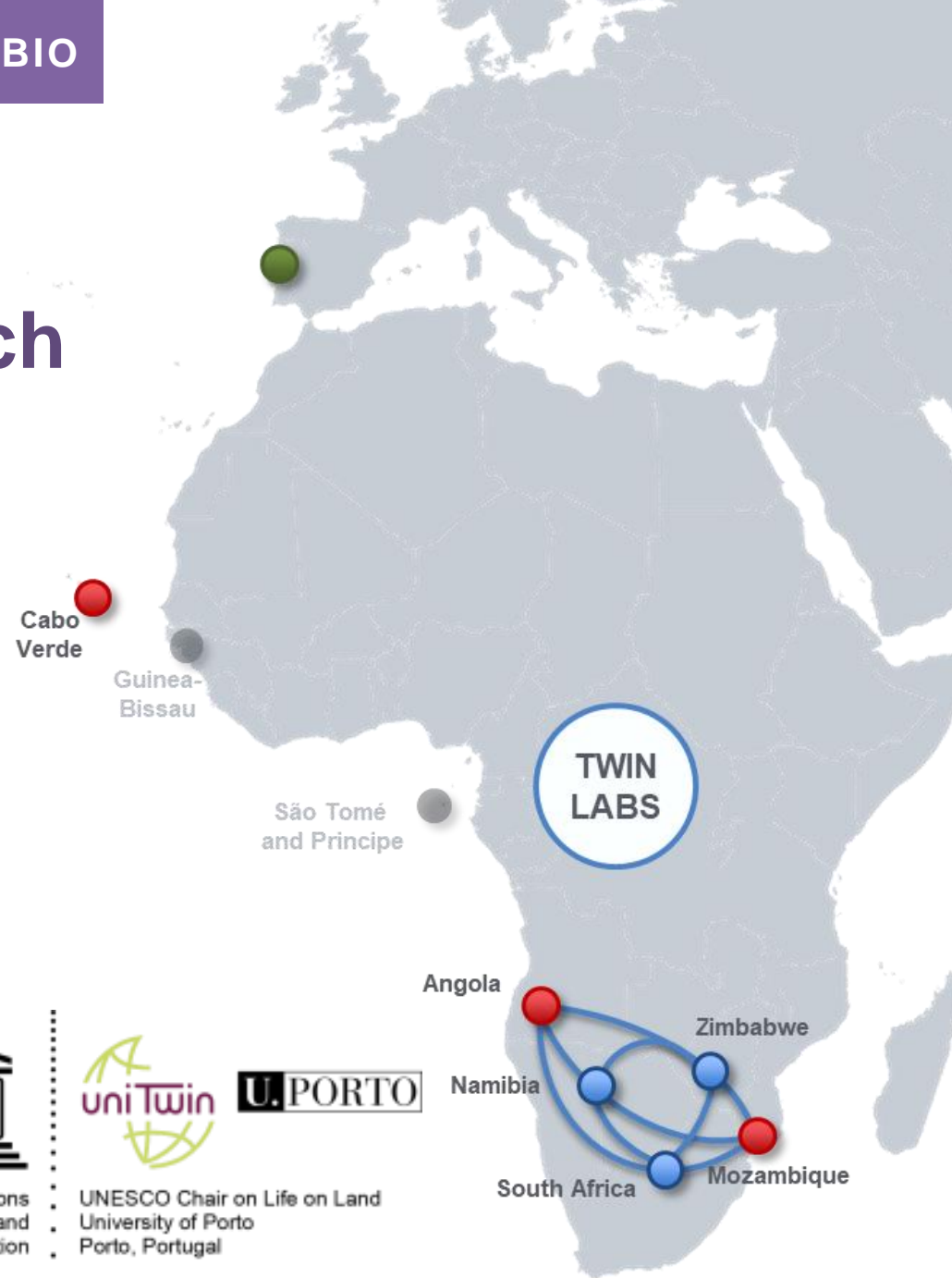
**CIBIO: R&D team size  
Affiliate: € and years**



# Expanding potential in TROPical BIOdiversity and ecosystem research towards sustainable life on land

Building on human resources and lab facilities supported by FP7 CAPACITIES and H2020 WIDESPREAD (ENVMETAGEN) projects to deal with complex research and innovation challenges linked to sustainable development in the tropics.

<https://cibio.up.pt/twinlabs-unesco>

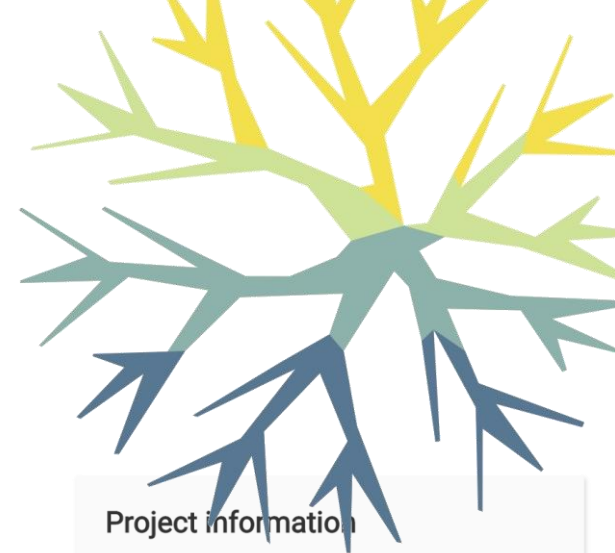


UNESCO Chair on Life on Land  
University of Porto  
Porto, Portugal

# BIOPOLIS: Teaming to Upgrade to Excellence in Environmental Biology, Ecosystem Research and AgroBiodiversity

The project envisions to establish BIOPOLIS as one of the best international Centres of Excellence in Environmental Biology, Ecosystem Research and AgroBiodiversity, with the capacity for spreading excellence towards innovation in the areas of Environment, Biodiversity and Agriculture, and thereby contributing to socioeconomic development.

<https://www.biopolis.pt/en/>



## Project information

### BIOPOLIS

Grant agreement ID: 857251

Status  
Ongoing project

Start date  
1 October 2019

End date  
30 September 2026

Funded under:  
H2020-EU.4.a.

Overall budget:  
€ 14 988 525

EU contribution  
€ 14 988 525



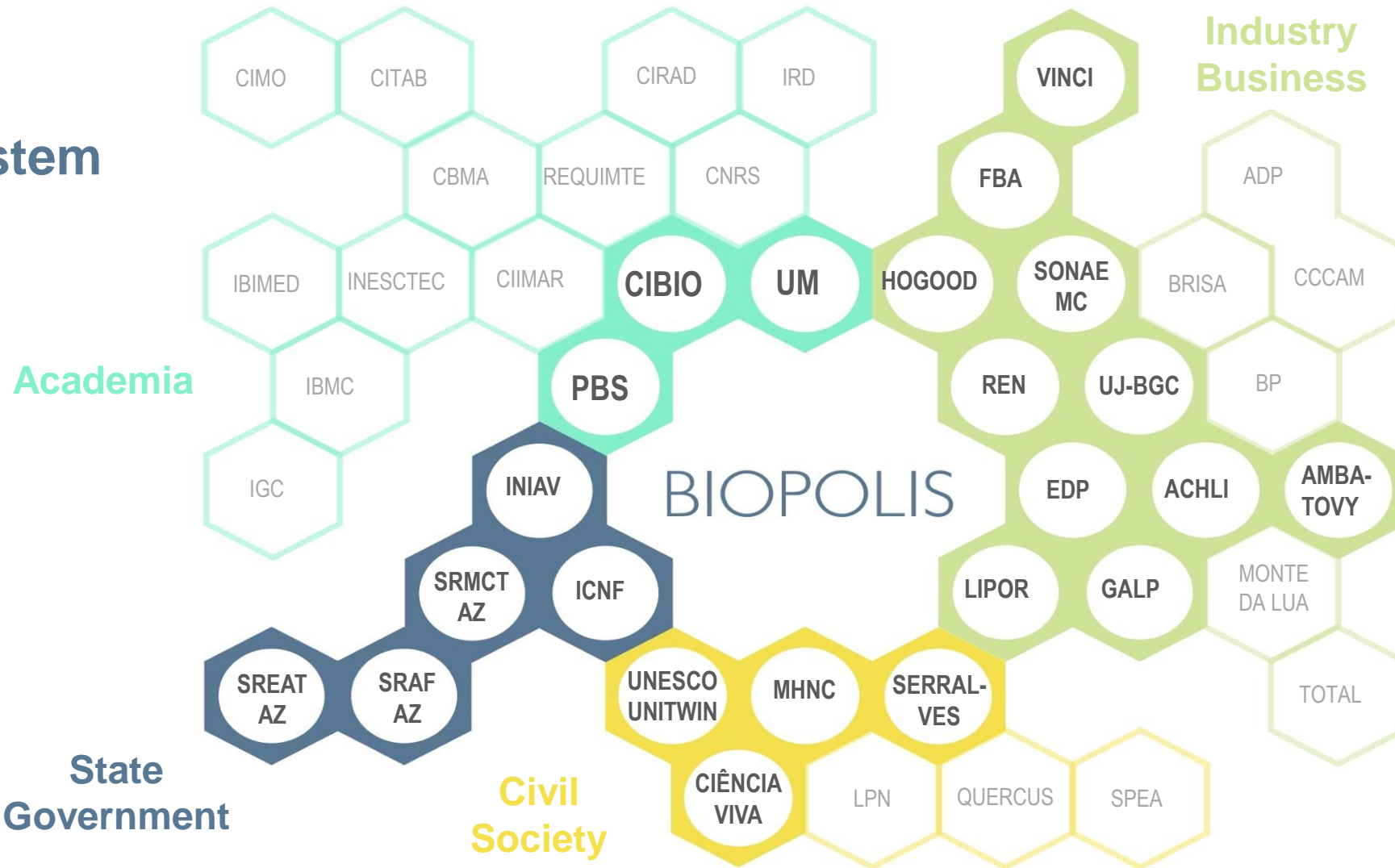
Coordinated by:  
ICETA INSTITUTO DE CIENCIAS,  
TECNOLOGIAS E AGROAMBIENTE DA  
UNIVERSIDADE DO PORTO

Portugal



# A transformative vision towards the future

## The Ecosystem





# Thanks for listening

## Funding Sources



THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT NO 668981