erinha

European Research Infrastructure
on Highly Pathogenic Agents

# ERINHA's Research Approach: From Discovery to Prevention

Fostering Africa-Europe cooperation
in high-consequence pathogens' research
online workshop, 5th November 2021

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ERINHA.EU

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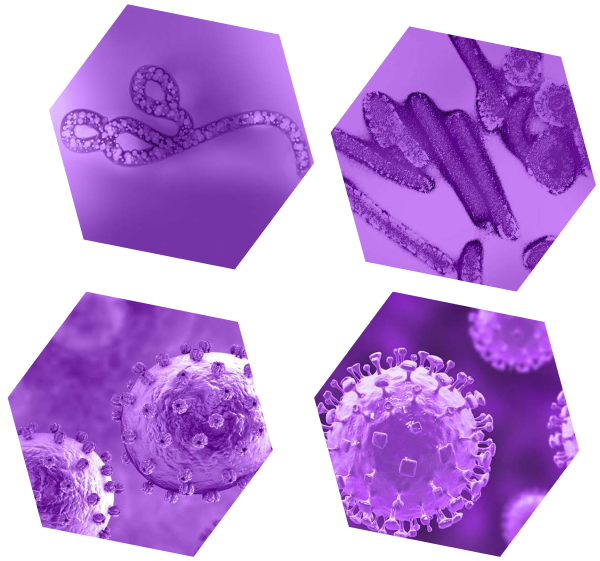
# ERINHA's Research Portfolio

## Matching with **Public Health** issues in **Africa**

- Pathogens prioritized by ERINHA (according to WHO R&D Blueprint)

  - *Filoviridae*: Ebola & Marburg viruses **++**
  - *Arenaviridae*: Lassa virus **++**
  - *Nairoviridae*: Crimean-Congo Hemorrhagic Fever Virus **++**
  - *Paramyxoviridae*: Nipah & Hendra viruses

  - SARS-CoV-2 **++**
  - Bacteria
  - Unknown pathogens **++**



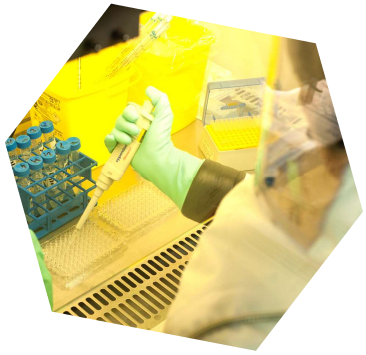
# ERINHA's scientific missions and actions

## Supporting research on **highly pathogenic agents**

- To **increase** the **comprehension** of infection and pathogenesis
  - Pathophysiology of viral infection
  - Immune response
  - Development of preclinical assays (*in vitro*, *in vivo*)
- To **develop** medical **countermeasures**
  - Diagnostic tools
  - Vaccines
  - Drugs & Therapeutics
- To **promote** scientists' skills

# ERINHA scientific missions and actions

Research



High containment laboratory

Training

Expertise

Capacity Building

# ERINHA scientific missions and actions

## Experimental activities in high containment laboratory

- *in vitro*
  - Classic and state-of-the-art models (primary cells, 3D..)
  - High-throughput screening assays
  - Virological assays

- *in vivo*
  - Animal disease models (from rodents to NHPs…)
  - Development of new disease model
  - Preclinical testing

**Research**

# ERINHA scientific missions and actions

## Supporting activities in high containment laboratory

- Training for safely working in high containment laboratory
- General **Biosecurity** Training
- Operations of a **Biosafety** Laboratory

➢ according to international standard

**Training**

- Development of research programs
- Risk assessment; best practices; emergency procedures
- Building and operating (in) a high containment facility
- Designing and implementing a biosafety program

**Expertise**

**Capacity Building**

# How does ERINHA reach its goals?

## Fostering excellence in scientific research

- through high containment **laboratories** (BSL-3, BSL-4)..

.. and **scientists**

**<u>Service Provision</u>**

- *free of charge* **T**rans**N**ational **A**ccess * (for the benefit of researchers)
- Paying services

**Contribution /<u>Coordination</u> scientific programmes and consortiums**

(**see presentation A Richard*)

# Access to ERINHA' services

## At the side of researchers

# Facilitating Research & Development

## Provision of services and expertise

- **Nipah Vaccine** Project - University of Tokyo through CEPI initiative

**P**roof-**O**f-**C**oncept *in vivo* efficacy study
ERINHA Member: NNK, Hungary
*ongoing*

Actors: Academy & Coalition for Epidemic Preparedness Innovations
**Vaccine Development -> critical impact on public health**

- **Trailhead Biosystems** Project - USA company

High-throughput screening of **anti-SARS-CoV-2 drugs**
**P**roof-**O**f-**C**oncept *in vivo* efficacy study
ERINHA Member: KUL, Belgium
*completed*

Actors: Private sector
**Drug development**

- **European Space Agency** (ESA) Call for Experts

Scientific advice/ estimate - Mars sample receiving facility
ERINHA: Coordinator
*completed*

Actors: EU intergovernmental organization
**Expertise for ambitious initiatives**

# Making science happen: TNA research projects

## *free of charge* TransNational Access: What, Who, How

- Through EU funding, **ERINHA** can periodically support User projects by providing access to its **catalogue of services for free**
- Open to **scientists** who **need** access to high containment facilities to advance their research project
- **Selection** based on technical feasibility and **quality** of the **proposed research project (independent peer-review)**
- **Non EU Users are eligible!**

# Making science happen: TNA research projects

## Service Provision: *free of charge* TransNational Access focus on **BSL-4 viruses**

- **ICONIM** - B. Horvat, M. Iampietro, International Center for Infectiology Research INSERM
  **I**mmune **CO**ntrol of **N**ipah virus **I**nfection in **M**ice (*ongoing*)
  ERINHA Member: NNK, Hungary

- **MuPaV** - T. Lambe, The Jenner Institute, University of Oxford
  (Assessment of) **Mu**lti-**Pa**thogen **V**accine targeting Filoviruses and an Arenavirus (*ongoing*)
  ERINHA Member: FoHM, Sweden

# Making science happen: TNA research projects

## Service Provision: *free of charge* TransNational Access focus on SARS-CoV-2

- **Project X** - Swedish SME
  Small molecules as anti-SARS-CoV-2 treatments (*ongoing*)
  ERINHA Member: MUG, Austria
- **NESARDia** - German company
  Development of **NE**xt generation **SAR**S-CoV-2 **Dia**gnostics (*manuscript in preparation*) (*ongoing*)
  ERINHA Member: MUG, Austria
- **SARS-CoV-2 SYBODIEs** - D Li, D Lavillette, Chinese Academy of Sciences & Institut Pasteur Shanghai
  SARS-CoV-2 neutralization by SYnthetic nanoBODIEs (*Nature Comm, 2021; EMBO Mol Med, 2021*)
  ERINHA Member: EMC, Netherlands
  *(completed)*

# Making science happen: TNA research projects

## New forthcoming TNA Calls

- **ERINHA-Advance project**

➢ upcoming (next weeks)

Special call on SARS-CoV-2 / COVID-19

**Follow at: www.erinha.eu**

**TNA Call**

- **ISIDORe**

➢ beginning 2022 (*see presentation A Richard*)

SARS-CoV-2 / COVID-19 ; emerging and epidemic-prone infectious diseases

# ERINHA outputs and impact on scientific community

## Strong contribution to develop medical countermeasures for emerging and epidemic-prone diseases

1. **Tracking emerging high-risk pathogens**

Providing **diagnostic** tools and capabilities

2. **Increasing knowledge on infection and mechanism of associated diseases**

Identifying viral targets for both **vaccine** and **therapeutic** scope

3. **Developing new interventions**

Enlarge modelling capability (preclinical studies)

4. **Translating intervention to the market**

Testing existing therapeutics against emerging agents

# ERINHA and the African region?

## Cooperation opportunities

- Collaborative Projects on emerging zoonotic viruses, epidemic preparedness…
- TransNational Access (TNA) to high containment facilities and expertise
- Exchange of experience and best practice sharing
- Capacity building and training opportunities (according to needs)
- Common standards complying with international standards development

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