

# Contained Insectary of PoloGGB

## Terni, Italy



POLO GGB  
GENOMICS · GENETICS · BIOLOGY

Prof. Dr. Ruth Müller

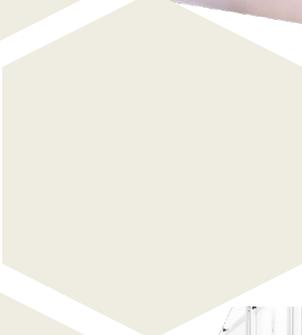
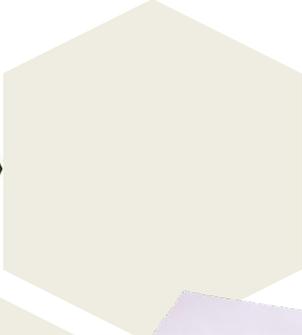
Chief Manager

Genetics & Ecology  
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Terni, Italy

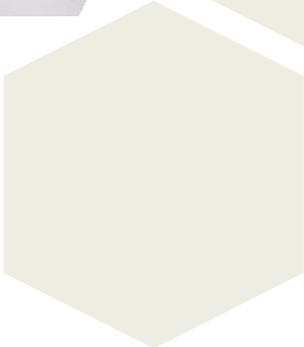
Head of the Unit  
Entomology

Department of  
Biomedical  
Sciences  
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Belgium





# Contained Insectary TR

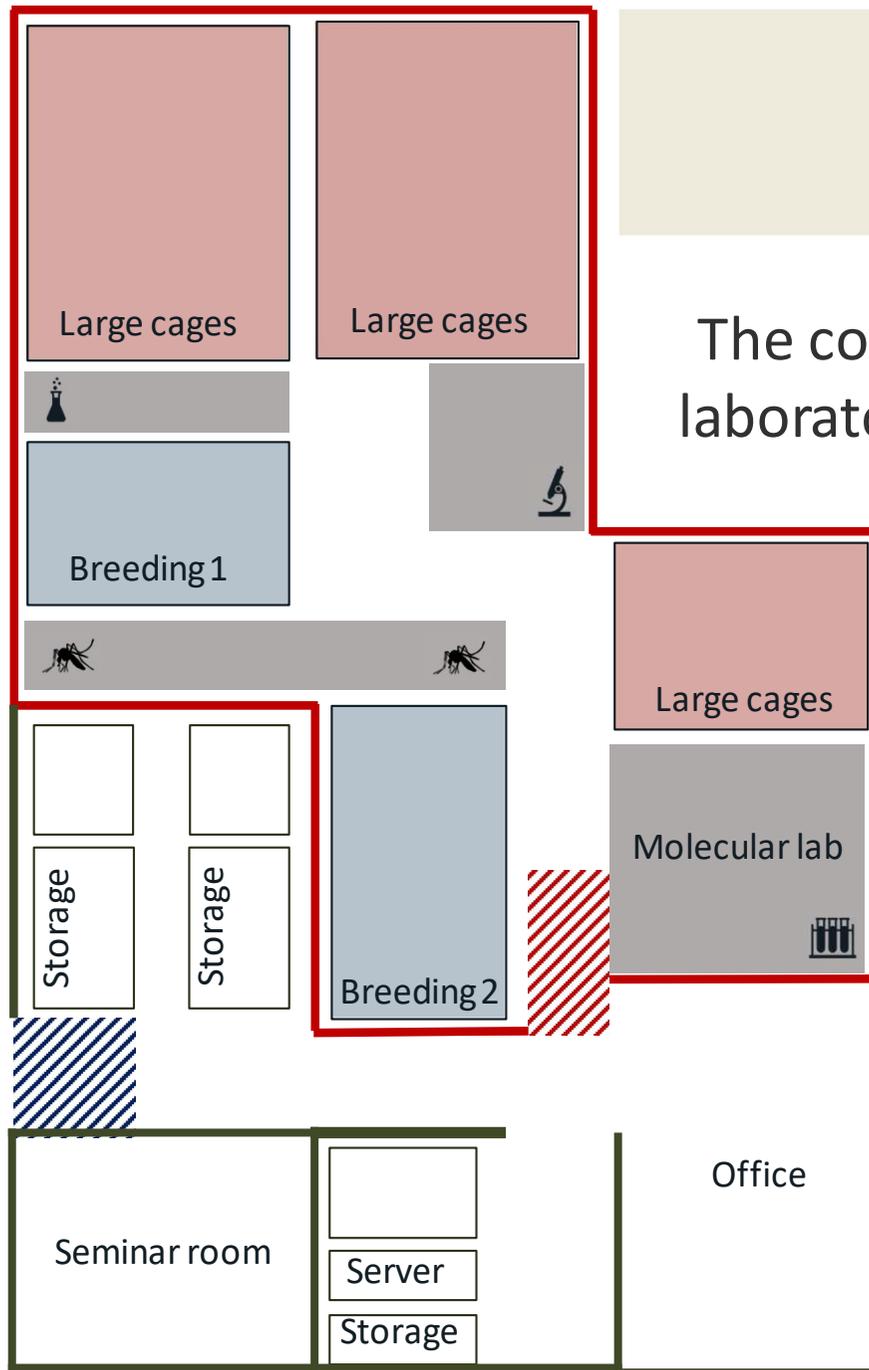


# The facility



The contained facility in Terni hosts a new laboratory for **ecological and genetic study** of malaria vectors.

**Biosafety level BSL2 and  
arthropod containment level  
ACL2**



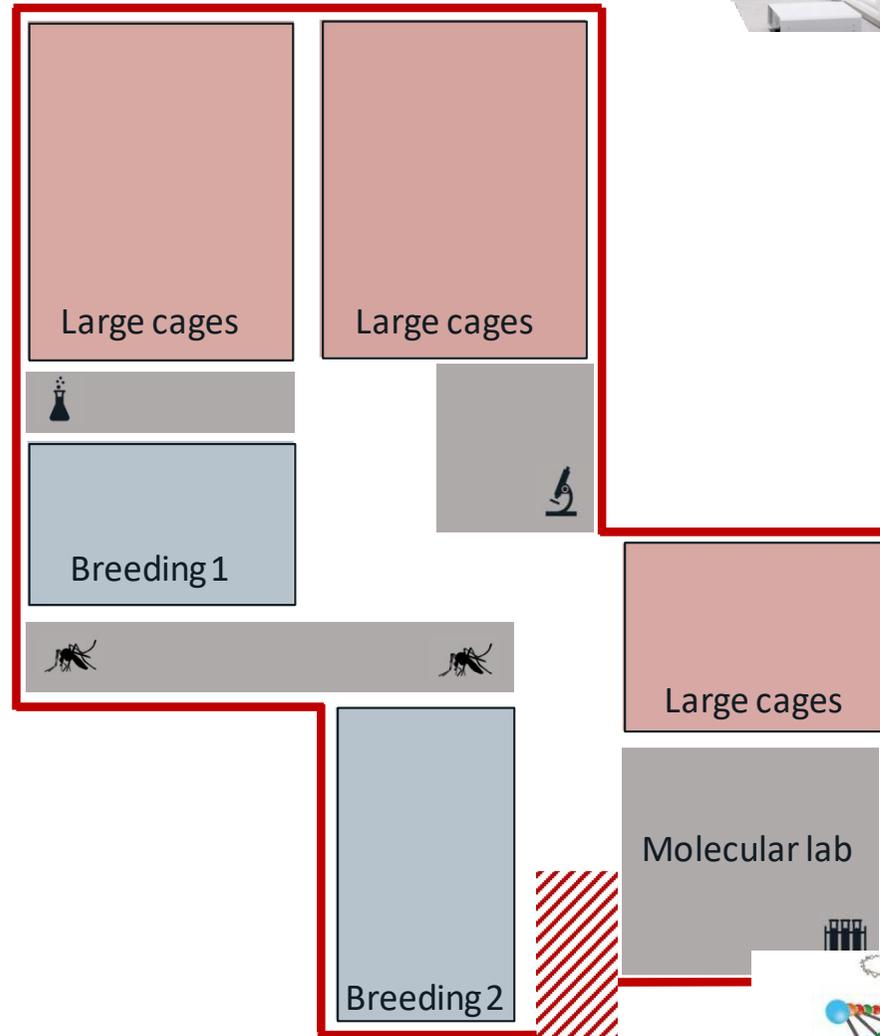


# Insectary



## Ultra-modern insectary

- > MOSQUITO REPOSITORY
- > ECOLOGY PLATFORM
- > MOLECULAR LABORATORY



# Containment



## Ecological containment

GM mosquito species are off-continent

## Physical containment

ACL2



- Location
- Infrastructure
- Procedures

## Standard Operating Procedures

CoP + 27 SOPs



# Legal framework for ACL2+ insectaries in Italy

## International law

- Cartagena Protocol on Biosafety

## European law

- EU Regulation 1946/2003 on the transboundary movement of GMOs (implementation of Cartagena Protocol)
- Directive 2001/18/EC on the deliberate release into the environment of GMOs
- Directive 2009/41/EC on the contained use of GMMOs
- Directive 200/54/EC on the protection of workers from risks related to exposure to biological agents at work

## Italian law

- D.lgs. 224/2003 on the deliberate release into the environment of GMOs
- D. lgs. 206/2001 on the contained use of GMMOs
- D.lgs. 81/2008 on work health and safety



# Authorizations and opinion



## ❑ Notifica di impianto:

Authorization from the Ministry of Health in Italy to operate at ACL2 & BSL2

- Field of application: Contained Use of GMMOs and GMOs
- Duties of operators: assess risks; assign the contained use to class 2
- Active from 25.07.2017

## ❑ Authorization from Ministry of Health to import African wild type colonies

## ❑ Official Opinion from ISPRA – Ministry of Environment: positive response on the contained use of GMOs in CRF-TR (Date:29.10.2019)



# Internal biosafety audits



## Expert Biosafety Group

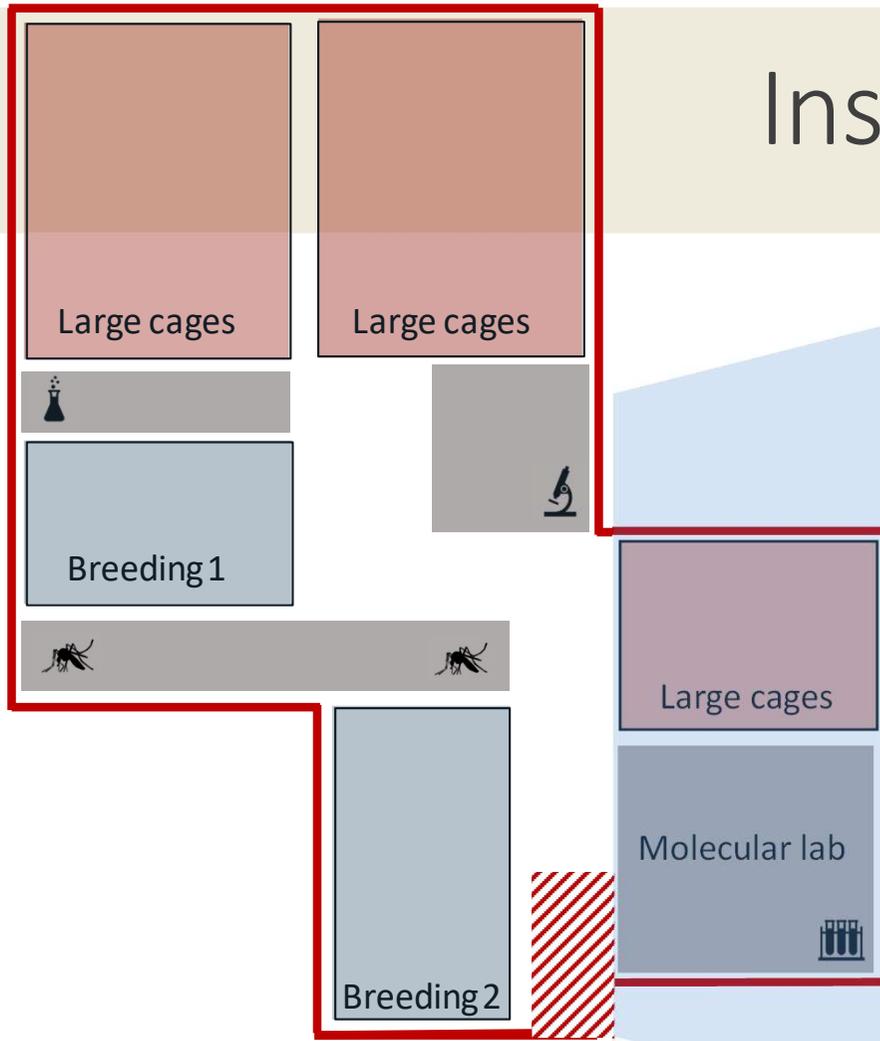
**5 experts for**  
Biosafety  
Communication  
GMM  
Vector biology  
Vector ecology  
Vector control

3-4 audits year<sup>-1</sup>

1. **Review** policies, procedures, training, programs related to the safe use of biological agents and other biological materials
2. **Propose** requirements for laboratory & biological safety practices
3. **Perform** periodic reviews and/or require modifications on biosafety issues related to the activities carried out in the facility
4. **Report** through the EBG significant problems with or violations of the working practices, guidelines or SOPs and accidents or illnesses
5. **Initiate** reviews or biosafety issues of particular interest or concern to the facility and the surrounding community



# Insectary access



BSL2/ACL2 area is through a room with a double door filter called vestibule



# Repository



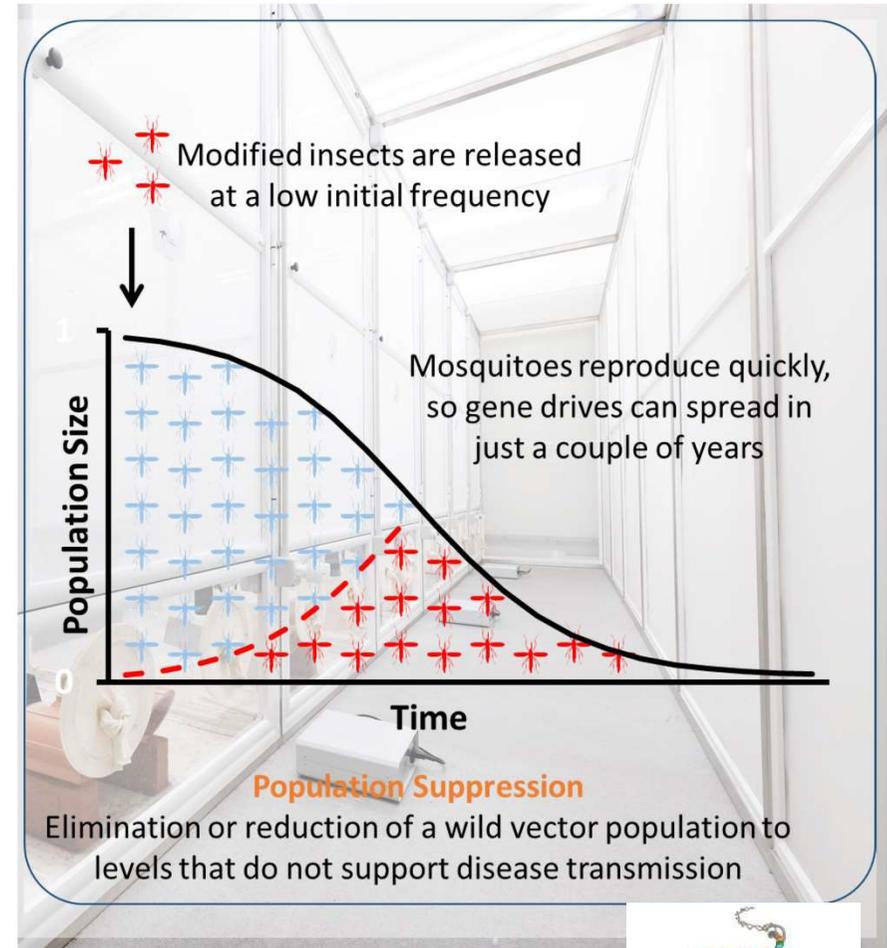
Two environmental chambers for mosquitoes rearing in small and medium size cages



Group	Application
Male bias	Self limiting drive
Male bias	Self limiting drive
Sterile male	SIT
Driving female fertility	Female fertility suppression
Driving female fertility	Female fertility suppression
Docking line	
Docking line	
Driving female fertility	Female fertility suppression
Anti-drive	Anti-drive
Anti-drive	Anti-drive
Anti-drive	Anti-drive
Male bias + Driving female fertility	Female fertility suppression
Docking line	
Docking line	
	Y-Drive
	Y-Drive
	Self limiting drive

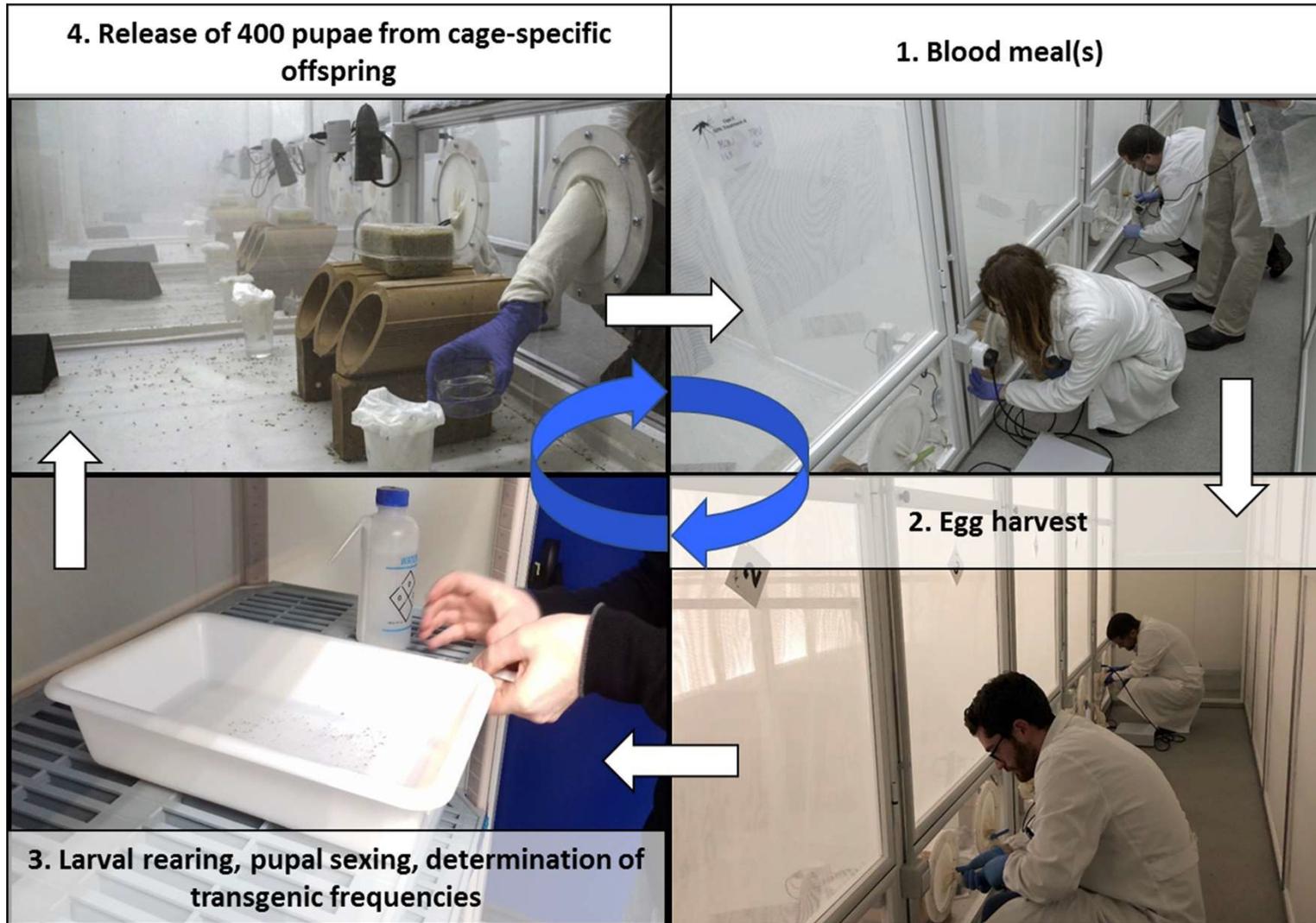


# Large cages

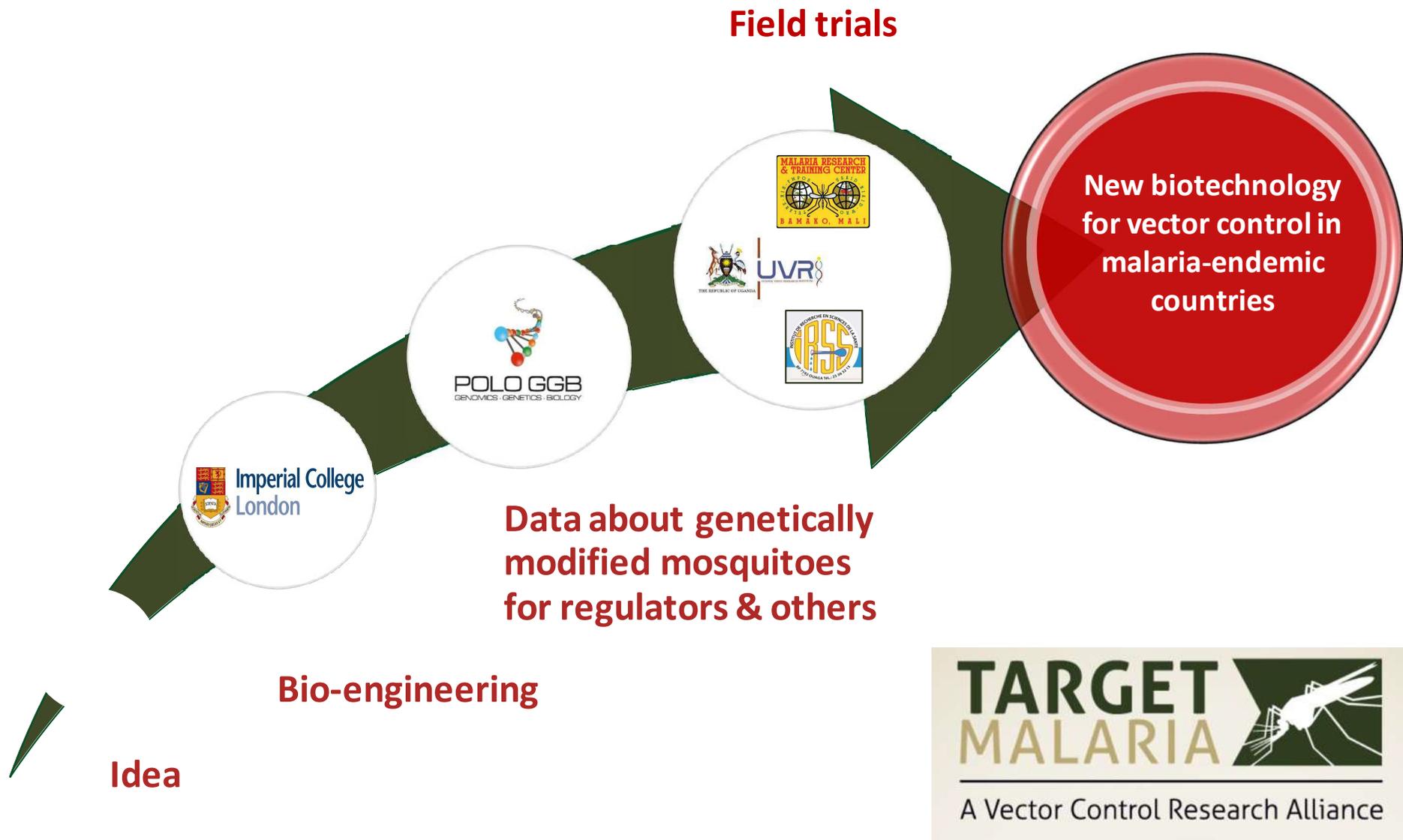


The environment mimics tropical condition

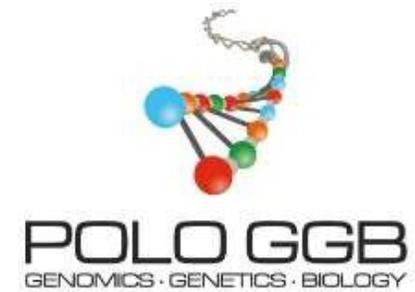
# Large cages



# From the idea to a new vector control tool



# Genetics & Ecology Platform PoloGGB, Terni, Italy



**PoloGGB team & University Perugia**