

## INSECTARIUM PLATFORM OF THE INSTITUTE OF MOLECULAR AND CELLULAR BIOLOGY



The **IBMC Insectarium** enables the **infection of mosquitoes**, including genetically modified mosquitoes, with **human and zoonotic** pathogens to study mosquito/pathogen interactions.

The Insectarium is composed of state-of-the-art facilities encompassing **more than 170 m<sup>2</sup>, with climatic chambers and laboratories dedicated to mosquitoes breeding** (*Anopheles*, *Aedes* and *Culex*) and to the **production of genetically modified mosquito lines**.

The platform carries out **mosquito infections with human** (malaria parasite *Plasmodium*) or **zoonotic pathogens** (dengue or Zika viruses), in **confined biosafety level 2 and 3 laboratories (100 m<sup>2</sup>)**. The BSL3 facilities are equipped with glove boxes to work with infected mosquitoes.

The Insectarium benefits from the expertise of IBMC laboratory "Models of Innate Immunity in Insects" (CNRS UPR9022 / Inserm U1257/ Unistra) for the development of molecular biology tools and protocols for the production of transgenic mosquitoes and CRISPR-Cas9 mutants, and for mosquito husbandry and infection.

The platform belongs to local and national platform networks, **CoRTecS** and **GIS IBISA**, respectively. It is also part of the European Research Infrastructure **Erinha**.

The Insectarium is open to public and private scientific communities. It offers various services, hosts researchers and provides them with specific training in the techniques developed on the platform.



**insecta**  
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<https://ibmc.cnrs.fr/laboratoire/insectarium/>



**IBISA** • Infrastructures en Biologie Santé et Agronomie



**erinha**

## A high-security platform for experiments with mosquitoes

### Mosquito breeding & characterisation:

- ② 8 climatic chambers (40 m<sup>2</sup>) : controlled temperature, humidity, day/night cycle
- ② 3 species : *Aedes*, *Anopheles*, *Culex*
- ② Supply of mosquitoes and mosquito products  
Living eggs, larvae, adults,  
Samples in RNA/DNA/Protein extraction buffer,  
Organs dissected and mounted on slide.
- ② Characterization of mosquitoes isolated from epidemic areas and mosquito monitoring



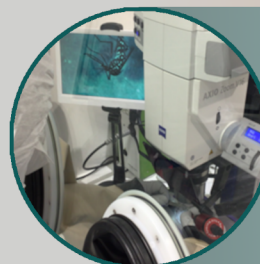
### RNA interference and transgenesis:

- ② 2 experimental rooms with an egg injection platform, binocular & fluorescence microscopes, mosquito larva sorters (COPAS), climatic cabinets.
- ② Creation of transgenic mosquito lines
- ② Creation of CRISPR/Cas9 mutant lines
- ② Inhibition of gene expression by RNA interference & phenotyping



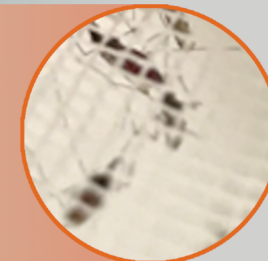
### Mosquito infection:

- ② BSL 2 and 3 laboratories (100m<sup>2</sup>) with 3 cell culture rooms, 3 mosquito infection rooms, 1 mouse housing room, gloveboxes for mosquitoes, a flow cytometer, a respirometer.
- ② Infection of *Anopheles* with *P. falciparum* et *P. bergheies*
- ② Infection of *Aedes* with dengue, Zika and chikungunya viruses
- ② Supply of infected samples and organs
- ② Access to biosafety level 2 and 3 laboratories



### Compound activity test on:

- ② Parasite survival : *P.falciparum* (in vitro), *P.berghei* (in vitro / in vivo)
- ② Mosquito survival
- ② Pathogen transmission



### Training courses:

- ② Mosquito breeding
- ② Micro-injection of mosquito eggs
- ② Biohazards and laboratory work in biosafety level 2/3 laboratories
- ② Handling and infection of mosquitoes in glove boxes

