MUSE

MONTPELLIER UNIVERSITY OF EXCELLENCE

THEMATIC

Health Ecology Evolution

RESEARCH UNIT SHEET

UMR MIVEGEC

Infectious Diseases and Vectors Ecology Genetics Evolution and Control

cnrs

IRD Institut de Recherche pour le Développement

UNIVERSITÉ DE MONTPELLIER

Infectious Diseases and Vectors Ecology Genetics Evolution et Control

114 scientific and technical staff

43 doctoral students

5 scientific departements

14 research teams

Understand, through integrative and transdisciplinary research, the mechanisms of emergence, amplification and transmission of pathogenic agents, their genetic and non-genetic determinants in order to be able to better understand the evolution of these infectious systems and to contribute to improving their control.

VIRUS
vectors, parasites
évolution
ECOLOGY
control
RESISTANCE
EMERGENCE

Scientific departements

ECOLOGICAL AND EVOLUTIONARY PROCESSES WITHIN COMMUNITIES (PEEC)

PATHOGENS, ENVIRONMENT, HUMAN HEALTH (EPATH)

EVOLUTION OF VECTOR SYSTEMS (VSE)

DISTURBANCES, EVOLUTION, VIRULENCE (PEV)

BIOLOGY OF VIRAL INFECTIONS: EMERGENCE, DIFFUSION, IMPACT, CONTROL, ELIMINATION (EDIFICE)

Research themes

Fundamental research on the functioning of ecosystems and the role of pathogens in their evolution: emergence - virulence - resistance - interactions.The search for sustainable public health solutions in developed and tropical countries: prevention & control of infectious diseases and vectors.

Various focal organisms -arboviruses, malaria, leishmaniasis, tick-borne diseases, fascioliasis, ebola, HIV, meningitis, tuberculosis, cholera, coronavirus, multidrug-resistant enterobacteria, papillomavirus, cancers - examined through the prism of ecology and evolution .

Platforms

Secure insectarium "Vectopôle" (IRD site DR Occitanie, Lavalette) http://www.vectopole-sud.fr/plateformes/vectopole

National Reference Center (CNR) for leishmania (CHU Montpellier site): https://cnr-leish.edu.umontpellier.fr/

Flagship projects

HUM-ANI: biodiversity and infectious and zoonotic diseases (Zimbabwe)

Leader: Eve MIGUEL | Funding: BNP Paribas Foundation Partenaires : Université du Zimbabwe, IRD, Cirad, CNRS, Partners: University of Zimbabwe, IRD, Cirad, CNRS, University of Oxford, Imperial College London, Nelson Mandela University & the veterinary services and national parks of Zimbabwe | details: https://cutt.ly/0hbDruA & https://cutt.ly/2hbDiaj

Long-acting injectable ivermectin formulation for the control of vector populations and reduction of malaria transmission - IMPACT Karine Mouline c

Collaborators: Medincell, Christophe Roberge; IRD Karine Mouline | Partners: IRD, Medincell, IRSS and CIRDES in Bobo Dioulasso, Burkina Faso | Funding: UNITAID

Are HPV vaccines 'evolution-proof'? Multilevel evolutionary ecology of human oncoviruses - EVOLPROOF Samuel Alizon

Funding: EU ERC | Partners: CNRS & CHU de Montpellier August 2021 | details: http://alizon.ouvaton.org/EVOLPROOF.html

Feasibility of the Sterile Insect Technique for the fight against Aedes albopictus in Réunion - Louis Clément GOUAGNA TIS-Réunion

DGS - ERDF funding Reunion region Partners: IRD, IAEA, CIRAD, ARS-OI, EHSP, EFS, University of Reunion | details: http://tis.re/

Adaptation of vector mosquitoes to global changes - Move-Adapt (ANR) Carlo COSTANTINI

Partners: IRD, IPD (Institut Pasteur Dakar), CEFE (Center for Functional and Evolutionary Ecology) details: https://anr.fr/Projet-ANR-18-CE35-0006

Success story

Management of insecticide resistance in Burkina Faso and Ivory Coast: research on vector control strategies: REACT

Consortium: Institute for Research in Health Sciences (IRSS), Bobo-Dioulasso, BF; Pierre Richet Institute (IPR) / National Institute of Public Health (INSP), Bouaké, RCI, Research Institute for Development (IRD), MIVEGEC, Montpellier, France.

Donor: Initiative 5% - Expertise France, 1,500,000 €

The partner's initial problem: The fight against malaria is currently facing the challenge of the emergence and expansion of resistance to the main curative (drugs) or preventive (vector control) tools available. The operational research project carried out concerns insecticide resistance and vector control.

The scientific issue: At present, additional tools to long-acting insecticide-treated mosquito nets (LLINs) have been offered to national control programs or are in development. Some tools are already integrated into the control strategies for the coming years (see the Burkinabé and Ivorian strategic plans) and are / will be the subject of requests for financial support from the Global Fund (FM) or from regional organizations - like UEMOA. These complementary tools are indoor residual insecticide spraying (IRS); strengthened information, education and communication strategies for population behavioral change (IEC); larval control based on the biological insecticide Bacillus thuringiensis israelensis (LAL); Ivermectin given to animals (IVM).

Scientific results of interest to the partner : Through the REACT project, a randomized controlled trial in two areas of strong mosquito resistance to insecticides was carried out in Burkina Faso and Côte d'Ivoire, in order to study the combined impact of these tools with LLINs on malaria transmission and disease occurrence. This project also made it possible to address the issue of residual transmission in the presence of control tools and was the framework for training technicians, master2 students and doctors in medical entomology, epidemiology and environmental epidemiology.

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MONTPELLIER UNIVERSITY OF EXCELLENCE

Montpellier University of Excellence (MUSE) is a Science Innovation Territories Economy Initiative (I-SITE) of the Future Investment Program. This program, carried by the University of Montpellier with 18 partners, encourages the construction of an internationally recognized university, in particular for its impact on major societal issues:
NOURISH, PROTECT, CARE. It covers all academic fields: research, training, student life, international life, partnerships with the socio-economic world.

With the support of the Occitanie Region Pyrénées-Méditerranée, MUSE organizes its strategy to detect needs and develop collaborations with companies around 5 themes:

- Agriculture et Agronomy
- Biology-Health
- Chemistry
- Environment-Ecology
- Mathematics, Computer Science, Physics and Structure

La Région Occitanie Pyrénées - Méditerranée

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Ecologie, Génétique, Evolution et Contrôle