04 December to 15 December 2023

University of New Caledonia (UNC) & Institut Pasteur de Nouvelle-Calédonie (IPNC)

MEDICAL ENTOMOLOGY

course in New-Caledonia

Co-directors

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RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

UNC UNIVERSITÉ DE LA NOUVELLE-CALÉDONIE

INSTITUT PASTEUR

INSTITUT PASTEUR de Nouvelle-Calédonie
PASTEUR NETWORK

CRESICA
Consortium pour la Recherche, l'Enseignement Supérieur et l'Innovation en Nouvelle-Calédonie

Pacific Community
Communauté du Pacifique

Relevance of the course

This course proposed by the Pasteur Network every 2 years targets health topics specific to a geographical region and involves teachers from the region. This course at the Institut Pasteur de Nouvelle-Calédonie aims to address mosquito vectors of arboviruses, malaria and filariasis, and vector control focusing on new strategies, including the use of the *Wolbachia* to interrupt the transmission of dengue and other arboviruses or to reduce vector densities. The specificity will come from the island environment which is characterized by a high rate of endemism; some mosquito species are only present on one island and can play the role of vector, like *Aedes hensilli* which is an unexpected vector of the Zika virus on the Yap Island. In addition, the islands offer an ideal field for testing new control strategies; their effectiveness is more easily measurable as the island system prevents any recolonization after the control trials.

Training outcomes

This course is eagerly expected in the region, it aims to further anchor the scientific approaches to the operational activities. Vector control will be better carried out by operational staff that will have better knowledge on vectors and pathogens. And conversely, students with a more academic background will be better confronted with the realities on the field. The objective is to make dialogue possible between academic science and the operational.

Structure of the course / training

This course will propose 27 hours of theoretical courses (session of 1.5 hour), 20h of practical work (session of 2 hours), 4h of roundtable (session of 2 hours) and a 1-day field trip.

Registration

Cost: 450 € (covering courses fees and accommodation)
Required academic level of the students:
Bachelor or master students, technicians with experience in vector surveillance and control
Number of students: 12
Courses Language: English / translated in French
Inscription Period: 1 August 2023 to 8 September 2023
(send a CV, a cover letter, and letter of recommendation in English or French to ipnc-training-course.entomo2023@pasteur.fr)
This course grants 6 ECTS

Partnerships

CRESICA (Consortium for research, higher education, and innovation in New Caledonia); Institut Pasteur de Nouvelle-Calédonie (IPNC); Institut Pasteur Paris (IPP); SPC (The Pacific Community); University of New Caledonia (UNC).

Week 1

(lectures: 15 hours / Practical work: 14 hours / Round table: 2 hours)

	Course	Teachers	Time
Monday, Dec 4th	Custom gesture for the course opening	-	1H
	Introduction: Importance of vector control and surveillance in the pacific	SPC	30 min
	Lecture: Mosquitoes: taxonomy, identification, ecology, biology	Nicolas POCQUET, IPNC	1H
	Lecture: Medical entomology and Vectorial transmission	Anna-Bella FAILLOUX, IPP	1H30
	Practical work: Methods to collect mosquitoes & Mosquito identification	Nicolas POCQUET, IPNC Christophe PAUPY, IRD	3H
Tuesday, Dec 5th	Lecture: Dengue in the Pacific region	Myrielle DUPONT-ROUZEYROL, IPNC	1H30
	Lecture: Recent emergences of arthropod-borne viruses (chikungunya and Zika)	Anna-Bella FAILLOUX, IPP	1H30
	Practical work: How to rear mosquitoes, visit of insectaries	Morgane POL, IPNC	2H
	Practical work: Different methods to detect viruses in mosquitoes	Myrielle DUPONT-ROUZEYROL, IPNC Olivia O'CONNOR, IPNC	2H
Wed, Dec 6th	Lecture: Africa, the cradle of current emerging arboviruses	Christophe PAUPY, IRD	1H30
	Lecture: Yellow fever, an old disease in emergence	Anna-Bella FAILLOUX, IP Paris	1H30
	Practical work: - Experimental infections of mosquitoes - Mosquito dissections (midgut, salivary glands) and saliva collections	Anna-Bella FAILLOUX, IPP; Olivia O'CONNOR, IPNC	4H
Thursday, Dec 7th	Lecture: Ross River, a threat: myth or reality?	Van-Mai CAO-LORMEAU, ILM	1H30
	Round Table: Globalization/climate change and vector-borne diseases	Morgan MANGEAS, IRD	2H
	Practical work: Identification of mosquito blood-meal source	Jean-Philippe MARTINET, IPNC Morgane POL, IPNC	2H
Friday, Dec 8th	Lecture: Mosquito microbiome and Transmission	Mathilde GENDRIN, IPFG (visio)	1H30
	Lecture: Human susceptibility to arboviral infections	Catherine INIZAN, IPNC	1H30
	Lecture: Modelling and vector-borne diseases	Claude FLAMAND, IP Cambodia (visio)	1H30

Week 2

lectures: 12 hours / Practical; directed work; field: 10 hours / Round table: 2 hours

	Course	Teachers	Time
Monday, Dec 11th	Lecture: Malaria and Anopheles mosquitoes in the Pacific region	Tanya RUSSELL, JCU (tbc)	1H30
	Lecture: Filariasis in the Pacific: status and specificities	Hervé BOSSIN, ILM	1H30
	Lecture: Mosquito surveillance in New Caledonia	Arnaud CANNET, DASS-NC	1H30
	Round Table: Risks of introduction of vectors or pathogens and the importance of surveillance for Pacific countries (RSI)	Laura DUPONT, DASS-NC	2H
Tuesday, Dec 12th	Lecture: Resistance to Insecticides	Jean-Philippe DAVID, CNRS	1H30
	Lecture: Vector control and operational research	Greg DEVINE, QIMR (tbc)	1H30
	Lecture: Screening of new molecules for insecticide use : the extracts of endemic plants	Nicolas LEBOUVIER, UNC	1H
	Practical work: Bioassays for detecting insecticide resistance	Nicolas POCQUET, IPNC; Morgane POL, IPNC	2H
Wed, Dec 13th	Lecture: World Mosquito Program	Nadège ROSSI, WMP-NC	1H30
	Lecture: Use of Artificial Intelligence (AI) to analyse Maldi-Tof spectrum for entomological purposes	Nazha SELMAOUI,UNC	1H
	Directed work: Identification of mosquitoes and detection of Wolbachia using Maldi-Tof	Morgane POL, IPNC	1H
	Lecture: A bacteria to reduce mosquito densities	Hervé BOSSIN, ILM	1H30
	Lecture: TIS to fight against mosquitoes	Clément GOUAGNA, IRD visio (tbc)	1H30
Thursday, Dec 14th	Field		6H
Friday, Dec 15th	MCQ (in French and in English) - Debriefing and evaluation of the course		3H
	Custom gesture for the course closing - Group Photo		1H

About UNC

UNC is a public institution under the authority of the French Ministry for Higher Education and Research.

Because of its size (3000 students) and its location not far from the city center of Noumea, every effort has been made to create a unique campus at Nouville with an emphasis on facilities for UNC and international students to ensure their comfort and success (student housing, sport center, learning center, cafeteria...).

UNC promotes initial and continuing opportunities to learn. The university has 3 departments (economics, law and management; literature, languages and social sciences; science and technology), 2 schools (school of education and pHD school) and an institute of technology.

In adequation with its mission specified in the 1998 Noumea agreement, research and training activities within UNC aim to meet the needs of New Caledonian development. Moreover, being a French and European university in the South Pacific, UNC's ambition is to :

- develop a policy of co-operation in the areas of science and teaching, in conjunction with foreign universities and organisations;
- participate in the public policies of regional co-operation of both France and New Caledonia in the domains of training and research;
- encourage mobility, both incoming and outgoing, of lecturers, researchers and students
- promote French teaching and French speaking.

About IPNC

IPNC is a member of the Pasteur Network linked to the Institut Pasteur in Paris, a non-profit private foundation recognised as being of public utility.

Its missions are :
- To develop axes of research targeting health and public health problems in New Caledonia, the Pacific region and more widely on an international scale, based on multidisciplinary approaches and exchanges of knowledge.
- To share its expertise in public health with the health authorities of New Caledonia, the WHO and the SPC by supporting the surveillance of emerging pathogens
- To participate in the training of scientists and health professionals through the development of courses and hosting of trainees in biology and research.

About New Caledonia

Located in the heart of the South Pacific and only a 2-hour flight away from Australia, New Caledonia is a tropical paradise with French influence.
The city of Noumea offers picturesque islands to explore (Duck Island, Amédée Island, Maître Islet) and is famous for its sunshine, beaches and shopping.
More information: https://www.newcaledonia.travel/en

Medical Entomology 2023

Contact : ipnc-training-course.entomo2023@pasteur.fr
More information : www.pasteur.fr/en/education