

Entomology Summer Course

*'Hands on' Course on Arthropods
of Medical and Veterinary Significance:
A global perspective, from theory to practice*

26 - 30 August, 2019

National Veterinary School of Toulouse, France

Continuing education in Medical and Veterinary Entomology



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The Parasitology and Entomology team at the National Veterinary School of Toulouse, France, organizes an entomology course which will be held from the 26th to 30th of August 2019. The course will highlight topics such as arthropod-borne diseases, resistance in arthropod populations, control tools, principles of laboratory rearing and morphological identification of arthropods of medical and veterinary importance.

The course will encompass several arthropod groups, namely sand flies, mosquitoes, midges (*Culicoides* spp.), Tabanidae, Muscidae, fleas, bedbugs, ticks and mites (Dermanyssidae and Sarcoptidae.) Lectures will generally take place in the morning, while the afternoon will be dedicated to laboratory and field work.

Preliminary program at a glance

| | Monday, 26 th August | Tuesday, 27 th August | Wednesday, 28 th August | Thursday, 29 th August | Friday, 30 th August |
|---|---|---|--|---|---|
| MORNING (08h30 am – 12h30 pm) | Introduction to medical and veterinary entomology <i>Prof Richard Wall, University of Bristol, United Kingdom</i> | Mosquito-borne diseases: a One Health perspective <i>Dr Anna-Bella Failloux, Institut Pasteur de Paris, France</i> | <i>Glossina</i> spp.: bio-ecology and African Trypanosomiasis <i>Prof Steve Torr, Tropical Liverpool School, United Kingdom</i> | Fleas and flea-borne pathogens <i>Dr Emilie Bouhsira, ENVT, France</i> | Ticks and tick-borne diseases in companion animals and wildlife <i>Dr Magalie René-Martellet, Dr Gilles Bourgoin, VetAgro Sup, France</i> |
| | <i>Phlebotomus</i> spp.: bio-ecology and pathogenic roles: human and animal leishmaniosis <i>Prof Jérôme Depaquit, Université de Reims, France</i> | Mosquito control and public health <i>Dr Fabrice Chandre, IRD, France</i> | <i>Stomoxys calcitrans</i> : bio-ecology and pathogenic role <i>Dr Emmanuel Liénard, ENVT, France</i> | Bedbugs: bio-ecology, pathogenic role and principle of laboratory rearing <i>Jean-Michel Bérenger, LDI, France</i> | <i>Dermatophagoides</i> spp.: bio-ecology, pathogenic role and control <i>Prof Lionel Zenner, VetAgro Sup, France</i> |
| | <i>Culicoides</i> spp.: bio-ecology and transmitted diseases <i>Dr Claire Garros, CIRAD, France</i> | Mechanisms of insecticide resistance <i>Dr Sylvie Cornélie, IRD, France</i> | Principles of alternative control tools against stable flies and tabanids <i>Prof Philippe Jacquet, ENVT, France</i> | <i>Principles of evaluation of the efficacy of an ectoparasiticide</i> <i>Prof Michel Franc, ENVT, France</i> | Sarcoptidae mites: bio-ecology and pathogenic role in human and animals <i>Prof Jacques Guillot, Dr Charlotte Bernigaud, ENVA, France</i> |
| AFTERNOON (1.30 – 6 pm) | Sand flies and midges: principles of morphological identification (+ trapping) <i>Prof Jérôme Depaquit, Dr Claire Garros</i> | Mosquitoes: principles of morphological identification Initiation to « <i>MoskeyTool</i> » <i>Nil Rahola, IRD, France</i> | Field work in the vicinity of Toulouse: principles of stable fly and tabanid trapping | Stable flies and tabanids: principles of morphological identification <i>Prof Gérard Duvallet, Université de Montpellier, France</i> | Ticks and tick-borne pathogens in livestock: a One Health perspective Principles of tick morphological identification <i>Dr Vincenzo Lorusso, University of Salford, UK, Vetoquinol, France</i> |
| | | Principles of mosquito laboratory rearing <i>Dr Emilie Bouhsira, ENVT, France</i> | | Principles of stable fly laboratory rearing <i>Dr Shukri Sharif, ENVT, France</i> | |

General information

Course Organizers: Emilie Bouhsira and Michel Franc

Dr Emilie Bouhsira (Programme Leader)
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EBVS® European Veterinary Specialist in Parasitology
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Scientific committee : Dr Emilie Bouhsira, Prof Michel Franc, Prof Philippe Jacquet, Dr Emmanuel Liénard

Dr Emmanuel Liénard
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Tel : +33 (0) 5 61 19 39 67
E-mail : p.jacquet@envt.fr

Course venue: National Veterinary School of Toulouse, 23 chemin des Capelles, 31076 Toulouse, France

Fees: 450 euros for students and EVPC residents, 950 euros for other participants.

Fees include teaching and laboratory materials, transportation for field work, coffee and lunch breaks and public transport pass.

Transport to and from Toulouse, accommodation and breakfast, and evening meals (except for welcome and gala dinners) are not included in the fees.

Application: please send a CV, a motivation letter, the name of two referees and the application form filled in with your details to Emilie Bouhsira: e.bouhsira@envt.fr

Deadline for application: 31st of March 2019

Language: The official language of the course will be English

Number of participants: maximum 12

Target participants: EVPC residents and diplomates, postgraduate (MSc, PhD) students, Post-Doc scientists, research fellows, entomologists, laboratory staff.

How to get to Toulouse

By plane: Toulouse-Blagnac international airport features direct flights to 74 destinations mostly in Europe and Northern Africa with a few additional seasonal long-haul connections.

Many domestic flights from main French cities also run daily.

From the airport to Toulouse downtown:

- **Tram**: the tram line T2 connects Toulouse centre with the airport and back, running every 15 minutes. The tram connects with metro Line A at the stop 'Arènes' and metro Line B at the stop 'Palais de Justice'.
- **Bus and coach**: Shuttle buses to Toulouse city centre, run from the airport, outside Hall B, every 20 minutes. Faster than the journey by tram, it takes approximately 20 minutes to reach the city centre by bus, stopping at 'Compans Caffarelli' or 'Jeanne d'Arc' (both on Metro Line B), or 'Jean Jaurès' (Metro Lines A and B) or 'Toulouse-Matabiau' railway station.

- **By train:** Toulouse can be reached by train from other French cities (Toulouse-Matabiau railway station).
- **By car:** Toulouse can be reached by car using existing major highways (National road tax). Within the city, however, the parking is extremely limited and very expensive. The vet school has however a large car park where you can leave your car.

Accommodation

The vet school is located in a residential neighborhood with limited public transportation, especially in the evening.

We recommend the **Residhome Occitania**, particularly for its location in-between the city center [public transportation (tram (Lines T1 and T2) and metro (Line A)) are at 5 minutes-walking distance] and the vet school (direct access with bus n°46). It is also directly reachable from the airport using the tramway.

The hotel is equipped with a swimming pool, which could be a great way to relax after a whole day of science! The weather in Toulouse is indeed usually very warm at the end of August.

Location : 93, avenue de Lombez - 31300 Toulouse

Tel. : +33 (0)5 61 44 08 34

E-mail : toulouse.occitania@residhome.com

<https://www.residhome.com/residence-hoteliere-aparthotel-toulouse-185.html>

Studio: approximately 61 euros/night (room with double-bed or two single beds and equipped kitchen)

One-bed room apartment: approximately 73 euros/night (in addition to the studio equipment, a leaving room with convertible sofa)

A booking code will be given to the participants to get these specific discounts.

Other options, closer to the vet school but further away from the city center:

<https://www.campanile.com/fr/hotels/campanile-toulouse-ouest-purpan>

<https://www.appartcity.com/fr/destinations/midi-pyrenees/toulouse/toulouse-purpan-aeroport.html>

<https://www.hotel-bb.com/fr/hotels/toulouse-purpan.html>

<https://www.accorhotels.com/fr/hotel-0445-novotel-toulouse-purpan-aeroport/index.shtml>

<https://www.residhome.com/residence-hoteliere-aparthotel-toulouse-199.html>

And also: <https://www.airbnb.fr>

To help your search, the neighborhood of the vet school is called "Lardenne".

List of lecturers

Richard Wall, B.Sc., M.B.A., Ph.D.

University of Bristol, United Kingdom

Jérôme Depaquit, Pharm. D., Ph.D.

University of Champagne-Ardenne, France

Claire Garros, M.Sc., Ph.D.

Centre of agricultural research for development (CIRAD), Montpellier, France

Anna-Bella Failloux, M.Sc., Ph.D.

Institut Pasteur of Paris, France

Fabrice Chandre, DVM, HDR, Ph.D.

Institute of Research for Development (IRD), Montpellier, France

Sylvie Cornélie, M.Sc., Ph.D.

Institute of Research for Development (IRD), Montpellier, France

Nil Rahola

Institute of Research for Development (IRD), Montpellier, France

Steve Torr, B.Sc., M.Sc., Ph.D.

Liverpool School of Tropical Medicine, Liverpool, United Kingdom

Emmanuel Liénard, DMV, M.Sc., Ph.D., Dip. EVPC

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Philippe Jacquiet, DVM, HDR, Ph.D., Dip. EVPC

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Gérard Duvallet, M.Sc., Ph.D.

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Jean-Michel Bérenger, M.Sc.
Laboratory of Insect and Diagnostic (LDI)
Research Unity on Tropical Infectious Emerging Diseases (URMITE), Marseille, France

Michel Franc, DVM, HDR, Ph.D., Dip. EVPC
EBVS® European Veterinary Specialist in Parasitology
National Veterinary School of Toulouse (ENVT), Toulouse, France

Shukri Sharif, BSc, Ph.D.
National Veterinary School of Toulouse (ENVT), Toulouse, France

Magalie René-Martellet, DVM, Ph.D.
National Veterinary School of Lyon (VetAgro Sup), Lyon, France

Gilles Bourgoïn, DVM, Ph.D.
National Veterinary School of Lyon (VetAgro Sup), Lyon, France

Lionel Zenner, DVM, Ph.D., Dip. EVPC
EBVS® European Veterinary Specialist in Parasitology
National Veterinary School of Lyon (VetAgro Sup), Lyon, France

Jacques Guillot, DVM, HDR, Ph.D., Dip. EVPC
EBVS® European Veterinary Specialist in Parasitology
National Veterinary School of Maisons-Alfort (ENVA), Maisons-Alfort, France

Vincenzo Lorusso, DVM, Ph.D., Dip. EVPC, Dip. ACVM
EBVS® and ACVM® European and American Specialist in Veterinary Parasitology
Vetoquinol, Paris, France
University of Salford, Manchester, United Kingdom

Preparatory work and final examination

The attendees will receive a selection of papers covering the topics that will be developed during the course at least one month prior to the beginning of the summer school.

The final examination will be made of 10 multiple choice questions and short answering questions.

A course feedback questionnaire will be sent to each participant via email to be filled at the end of the summer course.

Detailed program

Sunday 25th of August

Arrival of participants

20h00: Welcome dinner

Monday 26th of August

08h00: Welcome coffee

08h15-12h30: Lectures

08h15-10h15: Introduction to medical and veterinary entomology, Prof Richard Wall

10h15-10h30: Coffee break

10h30-11h30: Bio-ecology and pathogenic role of sandflies, Prof Jérôme Depaquit

11h30-12h30: Bio-ecology and pathogenic role of *Culicoides* spp., Dr Claire Garros

12h30-13h30: Lunch break

13h30- 18h30: Practical work

13h30- 16h00: Principles of morphological identification of sandflies, Prof Jérôme Depaquit

16h00-16h15: Coffee break

16h15- 18h00: Principles of morphological identification of *Culicoides* spp., Dr Claire Garros

18h00-18h30: How to set up a trap for *Culicoides* in the vet school facilities (large animal hospital)

Free evening

Tuesday 27th of August

08h15-12h30: Lectures

08h15-10h15: Mosquito-borne diseases: a one health perspective, Dr Anna-Bella Failloux

10h15-10h30: Coffee break

10h30-11h30: Mosquito control and public health, Dr Fabrice Chandre

11h30-12h30: Mechanisms of insecticide resistance in mosquitoes, Dr Sylvie Cornélie

12h30-13h30: Lunch break

13h30-17h30: Practical work

13h30-17h00: Principles of morphological identification of mosquitoes, Nil Rahola

Training on the recognition of the main European mosquito species of medical and veterinary significance.

Participants need to bring their laptop with them so as to install the software “MoskeyTool”, and will be taught how to use it.

Principles of mosquito mounting will also be addressed.

17h00-17h30: Principles of mosquito laboratory rearing, Dr Emilie Bouhsira

19H00: Welcome cocktail at the Toulouse town hall and welcome speech by a council member.

20H00: Dinner all together in Toulouse downtown

Wednesday 28th of August

08h15-12h30: Lectures

08h15-10h15: Bio-ecology of *Glossina* spp. and African trypanosomiasis, Prof Steve Torr

10h15-10h30: Coffee break

10h30-11h30: Bio-ecology and pathogenic roles of stable flies, Dr Emmanuel Liénard

11h30-12h30: Principle of alternative control tools against stable flies and tabanids, Prof Philippe Jacquet

12h30-13h30: Lunch break

14h00-18h30: Field work

14h00: Departure

Field work in a farm in the vicinity of Toulouse to learn the principles of trappings of stable flies and tabanids

18h30/19h00: Back to Toulouse

Free evening

Thursday 29th of August

08h15-11h30: Lectures

11h30-12h30: Practical work

08h15-09h15: Fleas and flea-borne pathogens, Dr Emilie Bouhsira

09h30-10h15: Bio-ecology and pathogenic role of bedbugs and principle of laboratory rearing, Jean-Michel Bérenger

10h15-10h30: Coffee break

10h30-11h30: Principles of the evaluation of the efficacy of an ectoparasiticide

11h30-12h30: Assessment of the efficacy of an ectoparasiticide against sandflies in laboratory condition - *Practical work*- Dr Emilie Bouhsira, Prof Michel Franc

12h30-13h30: Lunch break

13h30-17h30: Practical work

13h30-17h00: Principles of morphological identification of sandflies and tabanids, Prof Gérard Duvallet

17h00-17h30: Principle of stable fly laboratory rearing, Dr Shukri Sharif

18h30-19h30/20h00: Guided visit of Toulouse town centre

Free evening

Friday 30th of August 2019

08h15-12h30: Lectures

08h15-09h15: Ticks and tick-borne diseases in companion animals, Dr René-Martellet

09h15-10h15: Ticks and tick-borne diseases in wildlife, Dr Gilles Bourgoïn

10h15-10h30: Coffee break

10h30-11h30: Bio-ecology and pathogenic roles of *Dermanyssus gallinae*, Prof Lionel Zenner

11h30-12h30: Sarcoptidae: bio-ecology and pathogenic roles in human and animals, Prof Jacques Guillot and Dr Charlotte Bernigaud

12h30-13h30: Lunch break

13h30-18h30: Lecture and Practical work

13h30-14h30: Ticks and tick-borne pathogens in cattle: a one-health perspective,
Dr Vincenzo Lorusso

14h30-17h30: Principles of tick morphological identification, Dr Vincenzo Lorusso

18h00-19h00: Final examination of the course

20h30: Gala dinner in the centre of Toulouse

REGISTRATION FORM

Entomology Summer Course

26 - 30th of August 2019

Ecole Nationale Vétérinaire de Toulouse

To the organizing Committee: Dr Emilie Bouhsira and Prof Michel Franc

E-mail: e.bouhsira@envt.fr

To be sent with the CV and motivation letter

Name..... Surname.....

Institution.....

Address.....

City..... Country.....

Phone..... E-mail.....

Date of arrival:....., Date of departure:

Specific dietary
intolerance/allergy/requirement.....

Acceptance of terms and conditions

Please be aware that the course organizers are not responsible for any damage or injury in any way arising through transport, field and laboratory activities during participation of the course. We strongly suggest you to take out personal accident insurance if you do not already have it.

Place and date Signature.....