

X Parasitology Summer Course (ParSCo)



Residency Course on PARASITES, ARTHROPOD VECTORS AND TRANSMITTED PATHOGENS IN THE MEDITERRANEAN AREA

29 June to 6 July 2024

A course endorsed by



SPONSORS



and with the participation of



Bari, 4th December 2023

Dear colleagues,

We are pleased to announce the tenth edition of the Parasitology Summer Course (X ParSCo) organized by the Parasitology Unit of the Department of Veterinary Medicine, University of Bari (Italy), with the support of the European Veterinary Parasitology College (EVPC) and of *Parasites & Vectors*. Over the last years, more than 120 attendees from all continents have attended the ParSCo.

(see:

<https://www.youtube.com/watch?v=qpZ6FV9KQVI&feature=youtu.be>)

The ParSCo is an intense, one-week long course for parasitologists and post-graduate students working in the field of veterinary parasitology. This course is mostly focused on practical activities, with theoretical lectures making up less than 40% of the whole program. The program includes oral lectures and practical activities on collection, identification and diagnosis of parasites such as *Leishmania infantum*, TBPs, phlebotomine sand flies (e.g., *Phlebotomus perfiliewi*), ticks (e.g., *Ixodes ricinus* and *Rhipicephalus turanicus*), filarioids and eyeworms (*Thelazia callipaeda*). Participants will also attend clinical examinations of cattle and other domestic animals and sample collection from dogs for the diagnosis of arthropod-borne diseases. Attendees will also have the opportunity to participate in tick collection from the environment and clinical examination of dogs, cattle, sheep, goats and reptiles.

The course traditionally takes place in Basilicata, southern Italy, in the heart of the Mediterranean region

<https://www.youtube.com/channel/UCQaKY0wwTxOsz9QiPAqJ0tA>

This region is fairly suitable for an optimal development of arthropods and thus for the life cycles of many parasites including those causing arthropod-borne diseases. A considerable diversity of parasites, inhabiting different microenvironments, can be found in Basilicata. This region has received significant attention from researchers, not only for its outstanding species richness, but also because it represents a potential model for other countries in the Mediterranean area.

We thank Elanco Animal Health and Boehringer Ingelheim for their financial support.

We look forward to meeting you for an enjoyable X ParSCo meeting and sharing with you our experience in the field of parasitology!

*Domenico Otranto
Filipe Dantas-Torres
Jairo Mendoza-Roldan*
University of Bari, Italy

GENERAL INFORMATION

For any information, please refer to the secretariat (parscobari@gmail.com). Videos:

[Promo](#)

[Testimonials](#)

SCIENTIFIC ORGANIZERS

Domenico Otranto

DVM, PhD, Dip. EVPC, FRES

Professor of Parasitic Diseases

Department of Veterinary Medicine

University of Bari, Italy

Department of Veterinary Clinical Sciences

City University of Hong Kong

Filipe Dantas-Torres

DVM, MSc, DSc, PhD, Dip. EVPC, FRES

Principal Researcher

Department of Immunology

Aggeu Magalhães Institute

Recife/PE, Brazil

Jairo Alfonso Mendoza Roldan

Assistant professor of Parasitic Diseases

Department of Veterinary Medicine

University of Bari, Italy

SECRETARIAT

Livia Perles

PhD student

Department of Veterinary Medicine

University of Bari, Italy

e-mail:

parscobari@gmail.com

Phone: +39 080 4679837

Fax: + 39 080 4679837

VENUE

La Casa di Caccia, Potenza, Italy.

Parco Regionale di Gallipoli Cognato, Matera, Italy.

APPLICATION

Course applicants should fill the provided registration form (see below), accompanied by a motivation letter (no more than 500 words) and a recent photo to be sent to parscobari@gmail.com within the 16th January 2024. Within 16th February 2024, selected candidates will be notified and then may proceed with the payment of the registration fee according to the instructions below.

PARTICIPATION FEE

The total cost for participation is €1100 (includes accommodation, coffee break, light lunch, and dinner in Casa di Caccia, excluding the dinner in Pietrapertosa - second day). As soon you will be notified as a selected participant of the X ParSCo, to ensure your participation, €200 (non refundable) should be paid in advance to Meeting Planner by credit card or bank transfer ([Click here to register/ pay](#)). For any further information about the payment please send an email to: saveria@meeting-planner.it The remaining cost (€900) should be paid at Casa di Caccia, at the beginning of the course.

ITALIAN SOCIETY OF PARASITOLOGY YOUNG SCIENTIST GRANT

The Italian Society of Parasitology (Società Italiana di Parassitologia - SoIPa) will cover the participation fee for a young SoIPa member. A commission nominated by the SoIPa executive board will select the grant winner. For all information please visit <https://www.soipa.it/bandi/>.

ParSCo STUDENT GRANT

The organizers of X ParSCo will offer a scholarship amount of €1100 for a participant applying from a low-income country to cover the course fee (€1100). The commission will be formed by the scientific responsible of the course and the secretary who will select the grant winner, according to the following criteria:

- The candidate must be younger than 40 years at the time of application;
- The candidate must have taken part to relevant scientific activities in the field of parasitology;
- The candidate must not be affiliated to the top high GDP countries;
- Candidate must include a motivation letter, curriculum vitae and nationality proof.

OFFICIAL LANGUAGE

English.

ATLAS by plane

The Bari International Airport (Aeroporto di Bari "Karol Wojtyła") runs daily flights to and from the main European cities and many domestic flights from main Italian cities.

By train

Bari can also be reached from any Italian city by train (Ferrovie dello Stato: 8h from Milan, 5h from Rome, and 4h from Naples).

ACCOMODATION 1st night

We will suggest where to reserve the 1st night along with the acceptance letter. In any case, participants may choose other accommodations.

Venue of the course - La Casa di Caccia

Contrada Visciglietta

Pietrapertosa, Potenza - 85010

Basilicata, Italy

Phone: +39 0971 983101 <https://lacasadicaccia.it>

A 25x10 m swimming pool surrounded by the greenery of the park is available.

Attendees will be allocated to double to five bed rooms according to the availability and personal arrangements.

WEATHER

The area features the general characteristics of the typical Mediterranean climate. In June, temperatures range from 20°C to 32°C, with rainfall of 0.3 mm. A sweater and/or jacket may be useful for the evening but, over the daytime, a swimming suit may be more suitable (do not forget that there is a swimming pool, but for the free time only).

OBJECTIVES AND CONTENTS

The main objective of the course is to provide, by means of oral lectures (OL) and practical activities (PA), an overview about the following topics:

TICKS AND TICK-BORNE DISEASES

- Tick taxonomy, biology and ecology
- Tick-borne diseases
- Tick collection from hosts and from the environment
- Tick identification
- Tick dissection
- Tick slide mounting

SAND FLIES AND CANINE LEISHMANIOSIS

- Sand fly species in the Mediterranean area: biology and ecology
- Sand fly collection
- Sand fly slide mounting
- Sand fly identification
- Sampling collection for the diagnosis of leishmaniosis

PHORTICA VARIEGATA* AND *THELAZIA CALLIPAEDA

- Thelaziosis in Europe
- *Phortica variegata* collection and identification
- *Thelazia callipaeda* collection and identification

CLINICAL PARASITOLOGY

- Clinical presentation and diagnosis of vector-borne diseases
- Canine filarioid detection and identification

HELMINTHS

- General pipeline for helminth identification
- Sample collection from wild animals (e.g., reptiles, rodents)

OTHERS

- Updates on chemicals available for prevention and treatment of ectoparasites - Field studies in parasitology

GENERAL GOAL

The main goal of the course is to provide attendees with updated information on the biology and ecology of ticks, sand flies and other vectors of pathogens in the Mediterranean area. At the end of the course, they should be able to collect and identify important arthropod vectors (i.e., ticks, sand flies, and *Phortica variegata*) as well as to diagnose vector-borne infections in dogs and/or cats. Elements of clinical parasitology, presentation and diagnostic procedures of tick-borne diseases and canine leishmaniosis will also be provided.

PRE-REQUIRED KNOWLEDGE

- Basic knowledge of veterinary and/or medical parasitology
- Selected papers will be sent to the attendees one month before the course initiation

PEDAGOGICAL APPROACH

- Oral lectures (30%)
- Practical activities (70%)

LEARNING OUTCOMES

The attendees will be updated on the biology and ecology of the main arthropod vectors and pathogens in Mediterranean area. They will be able to: - Collect and identify ticks, sand flies and fruit flies (*P. variegata*)

- Dissect ticks, sand flies and fruit flies (*P. variegata*)
- Collect samples from dogs for the detection of dermal and blood circulating microfilariae
- Collect and identify *T. callipaeda*
- Collect samples from dogs infected by *L. infantum* and exam in the lab
- Exam slides for the cytological diagnosis of canine vector-borne pathogen infection
- Identify onchocercid nematodes infecting domestic animals

LIST OF LECTURERS AND TECHNICAL ASSISTANTS

Domenico Otranto

DVM, PhD, Dip. EVPC, FRES

Unit of Parasitic Diseases, University of Bari, Italy

Filipe Dantas-Torres

DVM, MSc, DSc, PhD, Dip. EVPC, FRES

Laboratory of Immunoparasitology, Aggeu Magalhães Institute, Recife, Brazil

Jairo Alfonso Mendoza Roldan

DVM, MSc, PhD, EVPC resident

Unit of Parasitic Diseases, University of Bari, Italy

Marcos Bezerra-Santos

DVM, MSc, PhD, EVPC resident

Unit of Parasitic Diseases, University of Bari, Italy

Riccardo P. Lia

DVM, PhD

Unit of Parasitic Diseases, University of Bari, Italy

Gad Baneth DVM, Ph.D., Dipl. ECVCP

Full Professor

School of Veterinary Medicine, Hebrew University, Israel

Frederic Beugnet
DVM, MsC, PhD, Dip. EVPC
Head of Global Technical Services for Parasitology and Parasiticides
Boehringer-Ingelheim

Carla Maia
DVM, MSc, PhD, DipEVPC, EBVS® European Veterinary Specialist in Parasitology
Assistant Researcher, with Habilitation
Instituto de Higiene e Medicina Tropical, New University of Lisbon

Bettina Schunack
DVM, PhD
Senior Technical Marketer, Pet Health International Parasiticides
Elanco Animal Health GmbH

SCIENTIFIC CONTEXT IN THE SPECIFIC AREA OF THE COURSE

Ticks are arthropods of medical and veterinary significance. Together with mosquitoes, they act as the main vectors of pathogens to animals and humans worldwide. Ticks transmit many emerging pathogens that have been discovered over the past decades, including several *Rickettsia* species. The Mediterranean region is particularly suitable for ticks in terms of host availability and climate features. For this reason, ticks can be found throughout the year in urban, suburban, rural, and forested areas. Indeed, some species (e.g., *Ixodes ricinus*) are found even during winter. We have conducted several studies on ticks and tick-borne pathogens in Basilicata. In one of these studies, we collected over 10,000 ticks from the environment and hosts, including humans. *Cercopithifilaria bainaie*, a poorly studied filarioid presenting dermal microfilariae, has been diagnosed in dogs and ticks. We have also conducted studies on ticks infesting wildlife, including birds. Altogether, these studies have been published in the international literature and provided interesting insights on the ecology of ticks and their transmitted pathogens in southern Europe.

Phlebotomine sand flies are vectors of several zoonotic pathogens including viruses, bacteria and protozoa. In the Mediterranean area, they are the main vectors of *Leishmania infantum*, the causative agent of leishmaniosis in dogs, cats, and humans. The study of the ecology of these insects can provide useful information about the spread of this infection as well as other viral agents in a given area. We have studied the species of sand flies occurring in Basilicata, their ecology, and their role as vectors of *L. infantum*. The richness of sand fly species has been specifically investigated in different localities near the forest of Gallipoli Cognato, a protected area located in the Basilicata region, southern Italy. Nearly 9,000 sand flies belonging to six species (*Phlebotomus papatasi*, *Phlebotomus perniciosus*, *Phlebotomus perfiliewi*, *Phlebotomus neglectus*, *Phlebotomus mascittii*, and *Sergentomyia minuta*) were collected, accounting for about 75% of the species diversity of sand fly population in Italy. These findings confirmed that sand flies are well adapted to the environment of the study area, where they find suitable conditions in terms of microclimate and host availability, for their perpetuation. Of particular interest, *P. perfiliewi* and *P. perniciosus* were the most abundant species, highlighting the risk for *L. infantum* transmission in the region.

Thelaziosis by *Thelazia callipaeda* (eyeworm) is common in wild and domestic carnivores in this area. Over the past 20 years, several studies on the biology of this nematode – both in the definitive host and in its vector (*Phortica variegata*) – have been carried out in the natural park of Gallipoli Cognato. These studies allowed us to predict suitable environments for the occurrence and development of *P. variegata* across Italy and Europe using a desktop implementation of the Genetic Algorithm for Rule-Set Prediction (GARP). The attendees of ParSCo will have the unique opportunity to visit the areas where the abovementioned studies have been carried out and to use the same methodologies presented in the published papers.

PREPARATORY WORK AND FINAL EXAMINATION

- Article reading (selected papers)
- Attendees should prepare in advance a short power point presentation (up to 10 min) about their main activities and field interests. - Final examination (10 multiple choice questions) - Course evaluation questionnaire.
- An oral presentation of the ParSCo activities will be delivered at the next EVPC meeting by one of the attendees.

CANDIDATE SELECTION

The course is also open to researchers and students from any country of the world with a particular interest in parasitology, including those who intend to apply for an EVPC Alternative Training Program and all peers who would like to delve in an intense week of field parasitology in southern Europe. The course organizers will select the candidates based on motivation letter, CV, application date, and training level. Applicants from low income countries will be prioritized (see also ParSCo student grant).

GROUP FORMATION

- In order to facilitate the activities, attendees may be divided in two or more groups.

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29 June to 06 July 2024

Application form
(Submission deadline: 16th January 2024)

To the Organizing committee
Fax: +39 080/4679839

E-mail: parscobari@gmail.com
Phone: +39 080/4679837

Name: _____ Surname: _____
Institution: _____
City: _____ Country: _____
Phone (WhatsApp): _____
E-mail: _____

I will arrive by Train Plane

Arrival date: _____

Arrival time: _____

Acceptance of terms and conditions

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

Date: _____

Signature

DETAILED PROGRAM TIMETABLE AND CONTENTS

Saturday 29 June

Arrival in Bari.

18:30-21:30 Welcome to the X ParSCo!

Welcome dinner (optional participation) in Torre a Mare, Bari. This is a welcome dinner offered by the course organizers. Meeting at the Campus Hotel at 18:30 for the departure (20' driving by car).

Sunday 30 June

8:30 Departure to Basilicata

11:30 Check-in at the hunting lodge

13:00-14:30 Lunch

14:30-15:00 Introduction to the course (D. Otranto and F. Dantas-Torres)

Contents: Presentation of the course location, organization, learning material for attendees (e.g., slides, selected articles, tick and sand fly identification keys).

15:00-16:00 Ticks (F. Dantas-Torres)

Contents: Oral lecture on tick origin, evolution, taxonomy and more.

16:00-16:30 Coffee break

16:30-17:30 Tick collection and preservation (F. Dantas-Torres)

Contents: Oral lecture on tick collection and preservation.

17:30-18:00 Refreshing break

18:30-20:00 Visit to Pietrapertosa.

Contents: Pietrapertosa is a town and comune in the province of Potenza, in the Southern Italian region of Basilicata. Pietrapertosa is part of *I Borghi più Belli d'Italia* (The most beautiful villages in Italy), an Italian association that notes small towns of strong artistic and historical interest. In 2019, CNN included Pietrapertosa among "20 of the most beautiful villages in Italy".

20:00-22:00 Dinner

Monday 1 July

7:30-8:30 Breakfast

8:30-9:30 Ectoparasites from wild animals and VBDs (J.A. Mendoza Roldan)

Contents: Oral lecture on mites and ticks associated to reptiles, rodents and birds in the park.

9:30-13:00 Ectoparasite collection from the environment and wild hosts (whole team)
Contents: Practical activities on ectoparasite collection in the field (Parco Gallipoli Cognato).

13:00-14:30 Lunch

14:30-19:00 Ectoparasite mounting and identification (whole team)
Contents: Oral lecture and practical activity on ectoparasites mounting and identification.

19:00-20:00 Refreshing break

20:00-22:00 Dinner

Tuesday 2 July

7:30-8:30 Breakfast

8:30-10:30 Tick and other ectoparasite collection from sheep and cattle (whole team)
Contents: Practical activity on tick collection from sheep and cattle in a local subsistence farm.

11:00-13:00 Phlebotomine sand flies: from the biology to mounting and identification (C. Maia and M.A. Bezerra-Santos)
Contents: Oral lecture on sand flies and their role as vectors of pathogens and practical activity (two groups) on sand fly identification.

13:00-14:00 Lunch

14:00-16:00 How to identify and do the xenodiagnosis of *Leishmania* with sand flies (C. Maia and M.A. Bezerra-Santos)
Contents: Practical activities with sand flies.

16:00-16:30 Coffee break

16:30-19:00 Sand fly collection (whole team)
Contents: Practical activity on sand fly collection using light traps and sticky traps (*Pizzaaiolo*).

19:00-20:00 Refreshing break

20:00-22:00 Dinner

22:00-22:30 *Team game*: sand fly collection (whole team)
Contents: After dinner, practical activity on sand fly collection using mouth aspirators.

Wednesday 3 July

7:00-8:30 Early good morning in the field! (R. Lia)

Contents: Practical activity on collection of light traps and sticky traps from the field.

7:30-9:00 Breakfast

9:00-10:30 Separation of sand flies from non-sand fly insects (C. Maia and M.A. Bezerra Santos).

Contents: Practical activity on the separation of sand flies from non-sand flies insects collected in the light and sticky traps

10:30-13:00 Canine leishmaniosis and other vector-borne diseases (G. Baneth, L. Perles)

Contents: Oral lecture and practical activities on sample collection from sick dogs (e.g., lymph node, blood, skin, and bone marrow) and diagnosis of vector-borne diseases.

13:00-14:00 Lunch

14:00-16:00 *Thelazia callipaeda* eyeworm and its vector (D. Otranto)

Contents: Oral lecture and practical activity on *T. callipaeda* and its vector. Training on eyeworm collection from dogs and parasite identification.

16:00-19:00 *Phortica variegata* collection (whole team)

Contents: Practical activity on *P. variegata* collection (*Casa Bianca*).

19:00-20:00 Refreshing break (use this extended break and also for studying)

20:00-22:00 Dinner

Thursday 4 July

8:00-8:30 Breakfast

8:30-10:00 Ectoparasiticides: from pyrethroids to isoxalolines (F. Beugnet and B. Schunack)

Contents: Oral lecture on ectoparasiticides, from the industry perspective.

10:00-10:30 Coffee break

10:30- 13:00 Diagnosis of canine leishmaniosis and other vector-borne diseases (G. Baneth)

Contents: Oral lecture and practical activities on wet lab (divided in two groups) on examination of samples collected from sick dogs and diagnosis of vector-borne diseases.

13:00-14:00 Lunch

14:00-16:00 Writing to a parasitology journal (F. Dantas-Torres, D. Otranto)

Contents: Oral lecture on scientific writing, how to choose a journal, and main reasons for rejection without review.

16:00-16:30 Coffee break

16:30-19:00 Dissection of ticks and sand flies

Contents: Practical activity on dissection of ticks and sand flies.

19:00-20:00 Refreshing break (use this extended break and also for studying)

20:00-22:00 Dinner

Friday 5 July

7:30-8:30 Breakfast

8:30-10:00 Pursuing an industry career (F. Beugnet and B. Schunack)

Contents: Colloquium about industry career with F. Beugnet (BI) and B. Schunack (Elanco).

8:30-11:00 It's your turn: attendees' talks

Contents: Attendees will deliver a short presentation (up to 10 min, including discussion) about their main activities and interests. The idea exchange is to stimulate future collaborations among attendees and the ParSCo team.

11:00-13:00 Free time for studying

Contents: The course organizers and collaborators will remain at the attendees' disposal to respond to any question or to solve doubts about the content of the past lectures. Attendees will have free access to stereomicroscopes and microscopes for practical activities during this time.

13:00-14:00 Lunch

14:00-16:00 Final exam

Contents: Attendees will sit a final exam (10 multiple-choice questions) on all topics discussed during the course. Attendees will also receive an evaluation questionnaire to give their impressions on the course.

16:00-18:00 Free time for refreshing and packing

19:00-20:00 Final results and delivery of certificates

20:00-22:00 Final dinner

Saturday 6 July

7:30-8:30 Breakfast

9:00 Checkout and return to Bari (back to reality!)