



University of Bari, Italy
Department of Veterinary Medicine



European Veterinary
Parasitology College

VII Parasitology Summer Course (ParSCo)



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

22th June to 29th June 2019

SPONSORSHIP

Golden Sponsor



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and with the participation of



SOIPA (Società Italiana di Parassitologia)



Parasites
& Vectors

Bari, 19th November 2018

Dear colleagues,

We are pleased to announce the seventh edition of the Parasitology Summer Course (VII 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 80 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*, sand flies (e.g., *Phlebotomus perfiliewi*), ticks (e.g., *Ixodes ricinus* and *Rhipicephalus turanicus*), cestodes, metastrongyloids of felids, *Trichinella* 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 bird trapping sessions and tick collection from birds as well as necropsies of wild cats and small ruminants for the detection of lungworms, cestodes and metacestodes.

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 Bayer Animal Health, Boehringer Ingelheim, SoIPa and Afosa for their financial support.

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

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

GENERAL INFORMATION

For any information, please refer to the secretariat (dedonno.cinzia@gmail.com).

Videos:

[Promo](#)

[Testimonials](#)

SCIENTIFIC ORGANIZERS

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VENUE

La Casa di Caccia, Potenza, Italy.
Parco Regionale di Gallipoli Cognato, Matera, Italy.

APPLICATION

Course applicants should fill the provided registration form, which should be accompanied by a motivation letter and a recent photo.

PARTICIPATION FEE

The total cost for participation is € 1100

- € 550 is to be paid to Società Italiana di Parassitologia (SoIPa) (includes venue, teaching and laboratory material, transportation to field sites and others).
- € 40 is to be paid to Campus Hotel (accommodation).
- € 510 is to be paid to La Casa di Caccia (accommodation, coffee break, lunch, and dinner). Cash payment is preferred.

Payment to the Società Italiana di Parassitologia (SoIPa) has to be issued by bank transfer to:

Società Italiana di Parassitologia (SoIPa)

IBAN= IT10 A 02008 62770 000012827594

(CIN = ABI = 02008 CAB = 62770)

UniCredit Banca filiale 2506, Ponte S. Nicolò (PD)

Codice BIC SWIFT: UNCRITM1R06

Please add as the reason for payment: Attendance to the VII Parasitology Summer Course (22th June to 29th June 2019, Italy).

Italian Society of Parasitology young scientist grant

The Italian Society of Parasitology (Società Italiana di Parassitologia - SoIPa) will cover the entire costs (travel and course fee) for a young SOIPA fellow. A commission nominated by the SOIPA executive board will select the grant winner, according to the following criteria:

- The candidate must be younger than 35 years at the time of application;
- The candidate must have authored publications in international peer-reviewed journals and taken part to relevant scientific activities in the field of parasitology.

DEADLINES

- Application: 22 March 2019;
- Communication to the secretariat regarding flight schedules: 1 May 2019.

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 – Campus Hotel

Via Celso Ulpiani, 11-13

Bari - 70126

Puglia, Italy

Phone+39 0805520805

Email: info@campushotel.it
www.campushotel.it

La Casa di Caccia

di Padula Luigi Antonio

Contrada Visciglietta

Pietrapertosa, Potenza - 85010

Basilicata, Italy

Phone: +39 0971 983101

<http://www.lacasadicacciapadula.com>

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

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 dogs, sheep, cattle, and birds
- Tick collection from the environment
- Tick identification
- Tick dissection and detection of pathogens
- Tick slide mounting
- Tick processing for molecular biology

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
- Sand fly processing for molecular detection of *Leishmania infantum*
- Sampling collection for the diagnosis of leishmaniosis

PHORTICA VARIEGATA AND THELAZIA CALLIPAEDA

- Emerging thelaziosis in Europe
- *Phortica variegata* collection and identification
- *Thelazia callipaeda* collection from dogs and identification

CLINICAL PARASITOLOGY

- Clinical presentation and diagnosis of vector-borne diseases

MOLECULAR BIOLOGY

- Sample preservation and DNA extraction

OTHER

- *Cercopithifilaria* spp. collection and identification
- *Onchocerca lupi* diagnosis
- Lungworm collection and identification
- Wild bird trapping and tick collection
- Necropsy of sheep for the detection of cestodes
- *Trichinella* spp. infection and diagnosis

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 *P. 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 (35%)
- Practical activities (65%)

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 and sand flies
- Dissect ticks, fleas and fruit flies (*P. variegata*)
- Collect samples from dogs for the detection of dermal microfilariae
- Collect and identify *P. variegata* and *T. callipaeda*
- Collect samples from cats for the diagnosis of lungworms infection
- Exam and collect samples from dogs infected by *L. infantum*
- Exam slides for the cytological diagnosis of canine vector-borne pathogen infection
- Main cestodes in the Mediterranean area
- *Trichinella* spp. infection and diagnosis

LIST OF LECTURERS AND TECHNICAL ASSISTANTS

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Department of Veterinary Medicine University of Sassari, Italy

Egidio Mallia
DVM
Parco Regionale di Gallipoli Cognato, Basilicata, Italy

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 baina*, 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.

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 15 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.

GROUP FORMATION

- In order to facilitate the activities, attendees may be divided in two or more groups
- Attendees will be allocated to double or triple rooms according to the availability and personal arrangements

**VII Parasitology Summer Course
(ParSCo)**

**Residency Course on:
ARTHROPOD VECTORS AND TRANSMITTED PATHOGENS
IN THE MEDITERRANEAN AREA**

22th June to 29th June 2019

**Application form
(To be sent before 22 March 2019)**

To the Organizing committee
Fax: +39 080/4679839

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

Name: _____ Surname: _____
Institution: _____
City: _____ Country: _____
Phone: _____ Fax: _____
E-mail : _____

I will arrive by train plane

Arrival date: _____

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 _____

DETAILED PROGRAM TIMETABLE AND CONTENTS

Saturday 22th June

Arrival in Bari and check-in at the Campus Hotel.

18:30-21:30 Welcome to the VII 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 23th June

8:30 Departure to Basilicata

11:30 Check-in at the hunting lodge

13:00-14:00 Lunch

14:00-15:00 Introduction to the course (Otranto and 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 (Dantas-Torres)

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

16:00-16:30 Coffee break

16:30-17:30 Ticks as vectors of disease agents (Otranto)

Contents: Oral lecture on the role of ticks as vectors of disease agents.

17:30-18:00 Refreshing break

18:00-20:00 Visit to Matera.

Contents: Matera is a city in the region of Basilicata lying in a small canyon, which has been eroded in the course of the years by a small stream (the Gravina). Known as the Underground City (la Città Sotterranea), Matera is well known for its historical centre called "Sassi", considered World Heritage Site by UNESCO since 1993, along with the Park of the Rupestrian Churches. On October 17, 2014, Matera was declared Italian host of European Capital of Culture for 2019. Because of its ancient primeval-looking scenery, Matera has been used by many filmmakers as the setting for the ancient Jerusalem. Among the numerous movies filmed in Matera are Mel Gibson's The Passion of the Christ and the most recent Patty Jenkins's Wonder Woman. The area of what is now Matera has been settled since the Palaeolithic. Romans allegedly founded the city in the 3rd century BC. In AD 664 Matera was conquered by the Lombards and became part of the Duchy of Benevento. In the 7th and 8th centuries the nearby grottos were colonized by both Benedictine and Basilian monastic institutions. The 9th and 10th centuries were characterized by the struggle between the Byzantines and the German emperors, including Louis II, who partially destroyed the city. After the settlement of the Normans in Apulia, William Iron-Arm ruled Matera from 1043.

20:00-22:00 Dinner

Monday 24th June

7:30-8:30 Breakfast

8:30-9:30 Tick collection, preservation, mounting and dissection (Dantas-Torres)

Contents: Oral lecture on tick collection, preservation, mounting and dissection.

9:30-12:00 Tick collection (whole team)

Contents: Practical activity on tick collection in the field.

12:00-13:00 Tick mounting and identification (Dantas-Torres)

Contents: Practical activity (two groups) on tick mounting and identification.

13:00-14:00 Lunch

14:00-19:00 *Trichinella* spp. infection (Pozio)

Contents: Oral lecture and practical activity on *Trichinella* spp. infection, including preparation and microscopic observation of samples.

19:00-20:00 Refreshing break

20:00-22:00 Dinner

Tuesday 25th June

7:30-8:30 Breakfast

8:30-10:00 Tick collection from sheep and cattle (whole team)

Contents: Practical activity on tick collection from sheep and cattle in a local, subsistence farm. Other ectoparasites such as louse flies (or keds) may also be present.

10:00-11:00 Phlebotomine sand flies (Dantas-Torres)

Contents: Oral lecture on sand flies and their role as vectors of pathogens.

11:00-13:00 Sand fly mounting and identification (Tarallo)

Contents: Oral lecture and practical activity (two groups) on sand fly identification.

13:00-14:00 Lunch

14:00-16:00 Vector-borne diseases: dogs, cats and humans (Baneth)

Contents: Oral lecture on vector-borne diseases of dogs, cats and humans.

16:00-16:30 Coffee break

16:30-19:00 Vector-borne diseases: diagnosis and clinical presentation (Baneth)

Contents: Oral lecture and practical activity (divided in two groups) on clinical cases of vector-borne diseases, clinical examination of a sick dog.

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 26th June

7:30-8:30 Breakfast

8:30-10:00 Cytological diagnosis of canine vector-borne diseases (Baneth)

Contents: Oral lecture and practical activity (divided in two groups) on sample collection from dogs (e.g., lymph node, blood, and bone marrow) and cytological diagnosis of vector-borne diseases.

10:00-11:00 Clinical aspects and epidemiology of feline leishmaniosis (Iatta)

Contents: Oral lecture on feline leishmaniosis.

11:00-13:00 Canine zoonotic tapeworms (cestodes) in southern Europe: updates on epidemiology, diagnosis, and control (Varcasia)

Contents: Oral lecture and practical activity on recent advances in research to understand parasite biology, diagnosis and control.

13:00-14:00 Lunch

14:00-15:30 *Thelazia callipaeda* eyeworm and its vector (Otranto)

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

15:30-17:30 *Phortica variegata* collection (whole team)

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

17:30-18:30 Sand fly collection (whole team)

Contents: Practical activity on sand fly collection using light traps and sticky traps (*Pizzaiolo*).

18:30-20:00 Refreshing break

20:00-22:00 Dinner

Thursday 27th June

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

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

8:00-8:30 Breakfast

8:30-11:30 Lungworms of wild and domestic cats (Brianti)

Contents: Oral lecture and practical activity (divided in two groups) on lungworms infecting wild and domestic cats and training on nematode collection (necropsy of wild cats) and identification.

11:30-13:00 Neglected filarioids of dogs (Otranto)

Contents: Oral lecture on *Onchocerca lupi* and *Cercopithifilaria* spp., neglected filarioids of dogs. Practical activity about the detection and identification of dermal microfilariae in dogs.

13:00-14:00 Lunch

14:00-17:00 Practical activity on tick and sand fly dissection and identification (Dantas-Torres, Otranto)

Contents: Practical activity on tick and sand fly dissection and identification.

17:00-19:00 Visit to Castelmezzano

Contents: Visit to a local village (Castelmezzano) near the Gallipoli Cognato Regional Park. Attendees will have the opportunity to try the famous *Il volo dell'angelo* (for more details, see: <https://www.volodellangelo.com/index.asp>).

20:00 Dinner

Friday 28th June

7:30-8:30 Breakfast

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 29th June

7:30-8:30 Breakfast

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