VI Parasitology Summer Course (ParSCo)

Residency Course on ARTHROPOD VECTORS AND TRANSMitted PATHOGENS IN THE MEDITERRANEAN AREA

30 June to 7 July 2018

SPONSORSHIP

Golden Sponsor

Silver Sponsor

and with the participation of

SOIPA (Società Italiana di Parassitologia)
Dear colleagues,

We are pleased to announce the sixth edition of the Parasitology Summer Course (VI 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 60 attendees from all continents have enjoyed attending the ParSCo. Please look in this promo the previous experience of people who attended the ParSCo https://www.youtube.com/watch?v=qpZ6FV9KQVI&feature=youtu.be

In addition, this year the ParSCo will be 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 traditionally includes oral lectures and practical activities on collection, identification and management of parasites such as Leishmania infantum, sand flies (e.g., Phlebotomus perfiliewi), ticks (e.g., Ixodes ricinus and Rhipicephalus turanicus), cestodes, metostrongiloylds of felids and the eyeworms (Thelazia callipaeda). Participants will also attend clinical examinations of cattle and other domestic animals and sample collection from dogs for the diagnosis of vector-born 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 (Aelurostrongylus abstrusus and Troglostrongylus spp.) and metacestodes.

The course traditionally takes place in Basilicata, southern Italy, in the heart of the Mediterranean region more info in the promo here in the following https://www.youtube.com/channel/UCQaKY0wwTxOs9QiPAAj0tA

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

We look forward to meeting you for an enjoyable VI ParSCo meeting and to 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).

Promo videos are also available by the following link:
https://www.youtube.com/watch?v=qpZ6FV9KQVI&feature=youtu.be
https://www.youtube.com/channel/UCQaKY0wwTxOs9QiPAqJ0tA

SCIENTIFIC ORGANIZERS

Domenico Otranto
DVM, PhD, Dip. EVPC, FRES
Professor of Parasitic Diseases
Department of Veterinary Medicine
University of Bari
Str. prov. per Casamassima km 3
70010 Valenzano (Bari), ITALY
e.mail: domenico.otranto@uniba.it
http://www.bariparasitology.it

Filipe Dantas-Torres
MV, MSc, DSc, PhD, Dip. EVPC, FRES
Department of Immunology
Aggeu Magalhães Institute
Av Prof Moraes Rego s/n
50670465 Recife/PE, Brazil
Department of Veterinary Medicine
University of Bari
Str. prov. per Casamassima km 3
70010 Valenzano (Bari), ITALY
e.mail: filipe.dantas@cpqam.fiocruz.br

SECRETARIAT

Dr. Maria Cinzia De Donno
Department of Veterinary Medicine
Str. Prov. le per Casamassima km 3
70010 Valenzano (Bari), ITALY
e.mail: dedonno.cinzia@gmail.com
Phone: +39 080 4679837
Fax: + 39 080 4679837

VENUE
Parco Regionale di Gallipoli Cognato, Matera, Basilicata, Italy.

PARTICIPATION FEE
The total cost for participation is €1100
• €550 is to be paid directly to the Hotel on-site (includes accommodation, coffee break, light lunch, and dinner). Cash payment is preferred.
• € 550 is to be paid to the Società Italiana di Parassitologia (SOIPA) (includes place of the meeting, teaching and laboratory material, transportation to field sites and others).

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 Reason for payment: Attendance to the VI Parasitology Summer Course (30 June-7 July 2018 Italy).

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

**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 other relevant scientific activities in the field of parasitology.

**AFOSA grant for a young fellow from a developing country**
AFOSA is a company specialized in the development, production and distribution of diagnostic products (ELISA kits) primarily for the use in veterinary medicine and it offers a grant to cover the course fee for a young fellow from a developing country included in the list reported in

The organizers of the course will select the grant winner, according to the following criteria:
- The candidate must be younger than 35 years at the time of application and send a cv;
- The candidate must present a motivational letter explaining how the attendance to the course would lead tangible improvements to the development of her/his scientific career in their own country.

**DEADLINES**
- Application: 18th February 2018 (closed).
- Communication to the secretariat regarding flight schedules: 18th February 2018.

**LANGUAGE**
The official language will be English.

**ATLAS**
**By plane**
The Bari International Airport (Aeroporto di Bari "Karol Wojtyla") 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: 8 h from Milan, 5 h from Rome, and 4 h from Naples).

ACCOMODATION
1st night – Campus Hotel
Via Celso Ulpiani, 11-13
Bari (BA) – 70126
Puglia
Phone +39 0805520805
Email: info@campushotel.it
www.campushotel.it

La Casa di Caccia
di Padula Luigi Antonio
Contrada Visciglietta
Pietrapertosa - Potenza (PZ) - 85010
Basilicata
Phone: +39 0971 983101
http://www.lacasadicacciapadula.com
A 25x10 m swimming pool surrounded by the greenery of the park is available.
€ 40 will be paid directly to the Campus Hotel and € 460 to Casa Della Caccia.

WEATHER
The area features the general characteristics of the typical Mediterranean climate. In July, 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 issues:

TICKS AND TICK BORNE DISEASES
- Tick species in Mediterranean area – biology and ecology (OL)
- Tick-borne diseases – TBDs (OL)
- Tick collection from dogs, sheep, cattle (PA)
- Tick collection from the environment (PA)
- Tick identification (PA)
- Tick dissection and detection of pathogens (PA)
- Tick mounting on slide (PA)
- Tick processing for molecular biology (OL/PA)

SAND FLIES AND CANINE LEISHMANIOSIS
- Sand fly species in Mediterranean area: biology and ecology (OL)
- Sand fly collection (PA)
- Sand fly mounting on slide (PA)
- Sand fly identification (PA)
- Sand fly processing for molecular detection of *Leishmania infantum* (OL/PA)
- Sampling collection for the diagnosis of leishmaniosis (PA)

PHORTICA VARIEGATA AND THELAZIA CALLIPAEDA
- Thelaziosis emergence in Europe (OL)
- *Phortica variegata* collection and identification (PA)
- *Thelazia callipeda* collection from dogs and identification (PA)

CLINICAL PARASITOLOGY
- Clinical presentation and diagnostic procedures of TBDs and CanL (OL/PA)

MOLECULAR BIOLOGY
- Sample processing for molecular techniques (OL)
- Genomics and transcriptomics of parasites (OL)
- High-throughput sequencing and bioinformatics (OL)

OTHER
- *Cercopithifilaria bainae* collection and identification (OL/PA)
- *Troglostrongylus* spp. collection and identification (OL/PA)
- Wild bird trapping and tick collection (PA)
- Necropsies of sheep for the detection of cestodes (OL/PA)
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 *Cercopithifilaria* spp. and *Troglostrongylus* spp. infestation and *L. infantum* infection in dogs. Elements of clinical parasitology, presentation and diagnostic procedures of TBDs and canine leishmaniasis will also be provided.
PRE-REQUIRED KNOWLEDGE

• DVM/MSc level knowledge of veterinary parasitology.
• Assignments and selected papers will be sent out to the students 1 month before the start of the course.

PEDAGOGICAL APPROACH

• Oral lectures (35.3%)
• Practical activities (64.7%)

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 from hosts and from the environment;
• Dissect ticks, fleas and fruit flies (P. variegata);
• Collect samples from dogs for the diagnosis of Cercopithifilaria infection;
• Collect and identify P. variegata and T. callipaeda;
• Collect samples from cats for the diagnosis of lungworm infection;
• Clinical examination of and sample collection from dogs infected by L. infantum;
• Cytological diagnosis of CanL and TBDs;
• Cestodes of dogs;
• Collection and identification of lungworms of felids.
LIST OF LECTURERS AND TECHNICAL ASSISTANTS

Domenico Otranto
DVM, PhD, Dip. EVPC, FRES
Full Professor
Unit of Parasitic Diseases, University of Bari, Italy

Filipe Dantas-Torres
DVM, MSc, DSc, PhD, Dip. EVPC, FRES
Researcher
Laboratory of Immunoparasitology, Aggeu Magalhães Institute, Recife, Brazil
Unit of Parasitic Diseases, University of Bari, Valenzano, Italy

Riccardo P. Lia
DVM, PhD Researcher
Unit of Parasitic Diseases, University of Bari, Italy

Emanuele Brianti
DVM, PhD Associate Professor
Unit of Parasitic Diseases, University of Messina, Messina, Italy

Gad Baneth
DVM, Ph.D., Dipl. ECVCP
Full Professor
School of Veterinary Medicine, Hebrew University, Israel

Guadalupe Miró
DVM, Ph D., Dipl. EVPC
Senior Lecturer
School of Veterinary Medicine, Universidad Complutense of Madrid, Spain

Viviana D. Tarallo
DVM, PhD Technician
Unit of Parasitic Diseases, University of Bari, Italy

Maria S. Latrofa
DBSci, PhD Researcher
Unit of Parasitic Diseases, University of Bari, Italy

Roberta Iatta
DPhC, PhD Researcher
Unit of Parasitic Diseases, University of Bari, Italy

Antonio Varcasia
DVM, MSC, PhD
Department of Veterinary Medicine University of Sassari, Italy

Egidio Mallia
DVM Practitioner and manager of the Park Veterinary Services Parco Regionale di Gallipoli Cognato, Matera, Basilicata, Italy
SCIENTIFIC CONTEXT IN THE SPECIFIC AREA OF THE COURSE

Ticks (Acari: Ixodida) are arthropods of medical and veterinary significance. Together with mosquitoes, they act as the main vectors of pathogens to animals and humans worldwide. Indeed, 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 climate and host availability. 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. *Cercopithecifilaria bainae*, 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 natural history of ticks and their transmitted pathogens in southern Europe.

Sand flies (Diptera: Psychodidae) 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 leishmaniasis in humans, dogs, and cats. 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 mascitti, 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 have 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

• Advance assignment (article reading)
• The attendees will prepare ½ page self-reflections on the contents of the course.
• A 20’ presentation of the ParSCo activities will be delivered at the next EVPC meeting.
• At the end of the course, attendees will take a Final examination (MCQ) on all topics discussed.

CANDIDATE SELECTION

First-come basis will be used for the selection of candidate applications, prioritizing those of EVPC residents. However, 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 immerse themselves in an intense week of field parasitology in southern Europe. The average daily workload is 13 hrs.

GROUP FORMATION

• In order to facilitate the activities the attendees could be divided in two groups (i.e., group A and B).
• Attendees will be allocated to double or triple rooms according to the availability and personal arrangements.
VI Parasitology Summer Course  
(ParSCo)  
Residency Course on:  
ARTHROPOD VECTORS AND TRANSMITTED PATHOGENS  
IN THE MEDITERRANEAN AREA  
30 June to 7 July 2018

Application form  
(To be sent before 18th February 2018)

To the Organizing committee  
Fax: +39 080/4679837  
E-mail: dedonno.cinzia@gmail.com  
Phone: +39 080/4679837

Name: ________________________  Surname: ________________________  
Gender: ________________________  
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 30th June
Arrival at the Bari International Airport and check-in at the Campus Hotel.

18:30-21:30 Welcome to the 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 1st July

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

15:00-17:00 Ticks and tick-borne diseases (OL)
   Contents: Lecture on general aspects of tick and tick-borne diseases.

17:00-20:00 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 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 2\textsuperscript{nd} July

7:30-8:30 Breakfast

8:30-10:30 Tick collection from the environment (OL, PA)
\textbf{Contents:} Training on tick collection by dragging and flagging in a meadow habitat

10:30-13:00 Tick preservation, dissection and mounting (OL, PA)
\textbf{Contents:} Training on how to preserve ticks for different purposes.

13:00-14:00 Lunch

14:00-15:30 Sample processing for molecular biology techniques (OL)
\textbf{Contents:} Methods of sample preparation, nucleic acids extraction and quality check.

15:30-18:00 Tick identification (OL, PA)
\textbf{Contents:} Training on morphological identification of ticks.

18:00-19:00 Sand fly collection (OP, PA)
\textbf{Contents:} Training on sand fly collection methods (\textit{La Casa di Caccia}).

19:30-20:00 Refreshing break

20:00-22:00 Dinner

22:00-22:30 A \textit{team game}: sand fly collection (leisure)
\textbf{Contents:} Sand fly collection using mouth aspirators.
Tuesday 3rd July

7:30-8:30 Breakfast

8:30-10:00 Tick and other parasite collection from sheep and cattle at a local, subsistence farm (PA)
Contents: Tick collection from domestic animals and discussion on the most common parasites of farm animals.

10:00-11:00 Phlebotomine sand flies in the Mediterranean region (OL)
Contents: Lecture on sand fly species of the Mediterranean region and their role as vectors of pathogens.

11:00-13:00 Sand fly identification and mounting (OL, PA)
Contents: Training on morphological identification of sand fly species.

13:00-14:00 Lunch

14:00-16:00 Diagnosis of vector-borne diseases (OL, PA)
Contents: Overview on tests that can be used for diagnosing vector-borne diseases in dogs and cats.

16:00-16:30 Coffee break

16:30-19:00 Clinical cases of vector-borne diseases (OL, PA)
Contents: Presentation of clinical cases of vector-borne diseases in dogs and clinical examination of a diseased animal.

19:00-20:00 Refreshing break

20:00-22:00 Dinner
Wednesday 4th July

7:30-8:30 Breakfast

8:30-10:30 Cytological diagnosis of canine vector-borne diseases (OL, PA)
Contents: Training on sample collection from dogs (e.g., lymph node, blood and bone marrow) and cytological diagnosis of vector-borne diseases.

10:30-11:00 New scenarios in the epidemiology of feline leishmaniosis (OL)
Contents: Feline leishmaniosis as a new threat to cats.

11:00-13:00 Canine zoonotic tapeworms (cestodes) in southern Europe: updates on epidemiology, diagnosis and control (OL, PA)
Contents: Lecture on recent advances on sequencing techniques to understand parasite biology, diagnosis and control.

13:00-14:00 Lunch

14:00-15:30 Thelazia callipaeda eyeworm and its vector (OL, PA)
Contents: Lecture on T. callipaeda and its vector. Training on eyeworm collection and identification from dogs.

15:30-17:30 Phortica variegata collection (PA)
Contents: Training on Phortica variegata collection from the environment (Casa Bianca).

17:30-18:30 Sand fly collection (PA)
Contents: Training on sand fly collection using light traps and sticky traps (Pizzaiolo).

18:30-20:00 Refreshing break

20:00-22:00 Dinner
Thursday 5th July

7:00-8:00 An early good morning in the field! (PA)
Contents: 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: Troglostrongylus spp. (OL, PA)
Contents: Lecture on Troglostrongylus spp. lungworms infesting wild and domestic cats and training on nematode collection (necropsy of wild felids) and identification.

11:30-13:00 Onchocerca lupi: neglected, zoonotic filarioid (OL, PA)
Contents: Lecture on Onchocerca lupi, an emerging, neglected zoonotic parasite and identification of microfilariae.

13:00-14:00 Lunch

14:00-16:00 Cercopithifilaria spp. in dogs and ticks (OL, PA)
Contents: Lecture on Cercopithifilaria spp. in dogs and ticks. Training on skin sampling collection from dogs as well as on tick dissection for detection of Cercopithifilaria larvae

16:30-20:00 Visit to the Park and some rural villages in the surroundings.

20:00 Dinner
**Friday 6th July**

7:30-8:30 Breakfast

8:30-12:00 Tick collection from birds (PA)
*Contents*: Training on wild bird trapping and tick collection from birds.

12:00-13:00 Lunch

13:00-15:30 Free time for studying
*Contents*: The course organizers and collaborators will remain at the attendees’ disposal to respond to any query or to solve doubts about the content of the past lectures. Attendees will have free access to stereomicroscopes and microscopes for doing practical activities during this free time.

15:30-17:30 Final examination of the course
*Contents*: Final examination (MCQ) on all topics discussed during the course.

17:30-20:00 Time for refreshing and packing

20:00-22:00 Final dinner
Saturday 7th July

7:30-8:30 Breakfast

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