

ISOPSI XI



9–13 September 2024 | Portorož, Slovenia
Programme and Abstract Book



ISOPS XI: International Symposium on Phlebotomine Sandflies
9–13 September 2024 | Portorož, Slovenia
Programme and Abstract Book

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WELCOME ADDRESS

Esteemed colleagues and honoured guests,

It is a great honour and pleasure to welcome you all to the 11th International Symposium on Phlebotomine Sandflies (ISOPS XI). We are thrilled to have gathered such a distinguished assembly of scientists and practitioners from around the world, united by our shared commitment to advancing the field of phlebotomine sandfly research.

Research on phlebotomine sandflies, the exclusive vectors of leishmaniasis, is now more important than ever. Given the unprecedented changes in our global climate, robust and innovative research on these vectors and the diseases they transmit is essential. Climate change is altering ecosystems, expanding the habitats of these vectors and consequently increasing the incidence and spread of leishmaniasis and other vector-borne diseases. Understanding the dynamics of phlebotomine sandflies in this changing environment is crucial for the development of effective control and prevention strategies.

This symposium provides an important platform for the exchange of knowledge, ideas and the latest research findings. Only through our collective efforts can we advance science and develop innovative solutions to the challenges posed by phlebotomine sandflies and the pathogens they transmit. Your presence here is a testament to your commitment to this cause and your contributions are invaluable.

I would like to express my deepest gratitude to the members of the Organising committee: Katja Adam, Sara Zupan, Jure Jugovic, Vit Dvorak and Ozge Erisoz Kasap, whose hard work and dedication have made this Symposium possible. Their tireless efforts in planning and coordination have ensured that we have a conducive environment for fruitful discussions and networking.

Once again, welcome to ISOPS XI. I look forward to the insightful presentations, stimulating discussions and new collaborations that will result from this meeting. Together we can make significant progress in the field of phlebotomine sandfly research and public health.

Thank you and have a wonderful time in Slovenia,

Vladimir

ISOPS XI PROGRAMME & TIMETABLE

9 MONDAY

14:00 – 19:00 REGISTRATION (ISOPS XI venue)

19:00 – 21:00 WELCOME COCKTAIL (News Café Bernardin)

10 TUESDAY

8:45 – 9.15 ISOPS XI OPENING

9:15 – 10.30 **Experimental models of *Leishmania* transmission**

Chair: Gioia Bongiorno

O1	9:15 – 9.30	Márcia Laurenti	<i>In vitro</i> and <i>in vivo</i> experimental model of atypical cutaneous leishmaniasis by <i>Leishmania infantum</i> using salivary gland homogenate of <i>Lutzomyia longipalpis</i>
O2	9:30 – 9:45	Kristýna Jelínková	The effect of <i>Phlebotomus duboscqi</i> saliva on the ongoing <i>Leishmania major</i> infection in a murine model
O3	9:45 – 10:00	Tomáš Bečvář	Experimental transmission of <i>Mundinia</i> by biting midges and sand flies
O4	10:00 – 10:15	Sarah Hendrickx	Application and optimization of a <i>Lutzomyia longipalpis</i> transmission model to initiate various forms of cutaneous leishmaniasis in laboratory animals
O5	10:15 – 10:30	Petr Volf	Mechanisms of <i>Leishmania</i> attachment to the sand fly midgut and the stomodeal valve

10:30 – 11:00		COFFEE BREAK	
11:00 – 12.30		Advances in <i>Leishmania</i> Research	
		Chair: Yara Traub-Cseko	
O6	11:00 – 11:15	Pedro Cecilio	<i>Leishmania</i> transmission is disrupted in sandflies colonized by <i>Delftia tsuruhatensis</i> TC1 bacteria
O7	11:15 – 11:30	Aida Bouratbine	Contribution of real-time PCR targeting kinetoplast DNA to access sandfly infection rate in areas with low <i>Leishmania infantum</i> transmission
O8	11:30 – 11:45	Fabiano Oliveira	Are bites of non-infected sand flies important for the maintenance of cutaneous leishmaniasis in animal reservoirs?
O9	11:45 – 12:00	Marcela Fuentes Carias	<i>Leishmania</i> hybridization in their sand fly vectors: investigation of the role of Gex1
O10	12:00 – 12:15	Liora Studentsky	New evidence indicating the endemic transmission of <i>Leishmania donovani</i> in Israel
O11	12:15 – 12:30	Suha Kenan Arserim	The first detection of <i>Leishmania donovani</i> DNA in Türkiye, in its proven vector <i>Phlebotomus alexandri</i>
12:30 – 14:00		LUNCH (News Café Bernardin)	
14:00 – 16:00		Sand fly behaviour & Symbiotic interactions	
		Chair: Jeffrey Shaw	
O12	14:00 – 14:15	Jeffrey Shaw	Neotropical sand fly anthropophily – a natural or unnatural behaviour
O13	14:15 – 14:30	Marcos Antonio Bezzera Santos	Electrophysiological and behavioural responses of <i>Phlebotomus perniciosus</i> to volatile organic compounds of dogs and humans
O14	14:30 – 14:45	Orin Courtenay	The efficacy of a synthetic sex-aggregation pheromone to detect <i>Lutzomyia longipalpis</i>

O15	14:45 – 15:00	Gideon Wasserberg	Oviposition ecology of <i>Phlebotomus papatasi</i> sandflies: patterns, processes, and applications
O16	15:00 – 15:15	Dia-Eldin Elnaiem	Effects of the Lunar Cycle on the Nocturnal Activity rhythm and Hourly Man-biting rates of <i>Phlebotomus orientalis</i> , the vector of visceral leishmaniasis in Sudan
O17	15:15 – 15:30	Amanda do Rosário Andrade	Assessing <i>Wolbachia</i> circulation in field populations of <i>Lutzomyia longipalpis</i> in an endemic area of visceral leishmaniasis in Brazil
O18	15:30 – 15:45	Kentaro Itokawa	Dual infection of <i>Wolbachia</i> and <i>Candidatus</i> <i>Tisiphia</i> to <i>Sergentomyia squamirostris</i> in Japan
O19	15:45 – 16:00	Nagila Secundino	Role of the microbioma in <i>Lutzomyia longipalpis</i> Vector competence: What do we know?
16:00 – 16:30	COFFEE BREAK		
16:30 – 18:00	Natural Infection of sand flies by pathogens Chair: Dia Elnaiem		
O20	16:30 – 16:45	Mattia Calzolari	Phleboviruses and <i>Leishmania</i> detection in sandflies: three years of monitoring in Lombardy and Emilia-Romagna Regions (Northern Italy)
O21	16:45 – 17:00	Nikola Polanská	Susceptibility of various sand fly species to Toscana virus
O22	17:00 – 17:15	Saini Prasanta	Detection of natural infection of <i>Leishmania donovani</i> among wild caught phlebotomine sandflies in India: an endemic focus of Leishmaniasis
O23	17:15 – 17:30	Eva Iniguez	Comparative analysis of <i>Leishmania</i> -infected sand flies in their microhabitats reveals the complexity of visceral leishmaniasis transmission in East Africa
O24	17:30 – 17:45	Mariaelisa Carbonara	Sympatric occurrence of <i>Leishmania infantum</i> and <i>Leishmania tarentolae</i> in <i>Sergentomyia minuta</i> sand flies

O25	17:45 – 18:00	Elyes Zhioua	Co-circulation of <i>Leishmania infantum</i> and Toscana virus in sandflies and dogs in a focus of canine leishmaniasis of Northern Tunisia
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11 WEDNESDAY

FREE DAY

EXCURSIONS

1. 9:00 – 17:00 ŠKOCJAN CAVES - LJUBLJANA
2. 9:00 – 17:00 LJUBLJANA - BLED

12 THURSDAY

8:30 – 10:30

Host and reservoir identification & Sand fly control

Chair: Shaden Kamhawi

O26	8:30 – 8:45	Shaden Kamhawi	An innovative toolbox aims to identify leishmaniasis reservoirs through analysis of individual field-collected blood fed sand flies
O27	8:45 – 9:00	Bruno Oliveira Cova	Invertebrate-derived DNA (iDNA) to identify sandflies' bloodmeal
O28	9:00 – 9:15	Sofia El Kacem	Establishment of an In-house library for host blood identification and blood meal analysis of a natural population of Moroccan <i>Phlebotomus sergenti</i> using a proteomic approach
O29	9:15 – 9:30	Marketa Stejskalova	<i>Asaia</i> bacteria in sand flies and their impact on <i>Leishmania</i> transmission

O30	9:30 – 9:45	Mara Cristina Pinto	Evaluation of biological parameters of female <i>Lutzomyia longipalpis</i> (Diptera:Psychodidae) after contact with insecticide-impregnated screens
O31	9:45 – 10:00	Rafaella Albuquerque e Silva	Insecticide impregnated collars for the control of visceral leishmaniasis: evaluation of the susceptibility of <i>Lutzomyia longipalpis</i> to deltamethrin
O32	10:00 – 10:15	Fredy Galvis Ovallos	Assessment of the impact of deltamethrin-impregnated collars on density of <i>Lutzomyia longipalpis</i> in an endemic area of visceral leishmaniasis in Brazil
O33	10:15 – 10:30	Kardelen Yetismis	Preliminary results of Insecticide resistance bioassay against synthetic pyrethroids on sandflies in west part of Türkiye
10:30 – 11:00		COFFEE BREAK	
11:00 – 12:30		POSTER SESSION	
12:30 – 14:00		LUNCH (News Café Bernardin)	
14:00 – 16:00		<p>CLIMOS project - Climate Monitoring and Decision Support Framework for Sand Fly-borne Diseases Detection and Mitigation</p> <p>Chair: Ozge Erisoz Kasap</p>	
O34	14.00 – 14:15	Carla Maia & Suzana Blesić	Providing a better knowledge and comprehension of climate and environmental drivers of sand fly-borne diseases - the CLIMOS project
O35	14.15 – 14:25	Vit Dvorak	Sand fly sample collection and analysis
O36	14.25 – 14:35	Gioia Bongiorno	<i>Leishmania</i> and <i>Phlebovirus</i> detection in sand flies and canine sera samples
O37	14.35 – 14:45	Jovana Sadlova	Vector competence of European sand flies to <i>Leishmania</i> and phleboviruses
O38	14.45 – 14:55	Orin Courtenay	Development of a sand fly semio-chemical attractant remote monitoring device

O39	14.55 – 15:05	Iva Kolarova	Development of recombinant salivary antigens as risk markers
15.05 – 15:10		DISCUSSION	
O40	15.10 – 15:20	Yoni Waitz	Large-scale analysis of long-term historical data of sand fly populations
O41	15.20 – 15:30	Vladan Gligorijević	Originality, simplicity and reusability of visual tools developed for CLIMOS EWS
O42	15:30 – 15:40	Sergio Natal	The development of an Early Warning System under the framework of CLIMOS project
O43	15.40 – 15:50	Diana Guardado	Promoting and disseminating sand fly research to various audiences
15.50 – 16:00		DISCUSSION	
16:00 – 16:30		COFFEE BREAK	
16:30 – 18:00		Leishmania Vector Interactions Chair: Petr Volf	
O44	16.30 – 16:45	Tiago Serafim	IgM promotes genetic exchange of <i>Leishmania</i> inside the sand fly vector
O45	16.45 – 17:00	Rodrigo Pedro Pinto Soares	Salivary glands of <i>Nyssomyia neivai</i> during <i>in vivo</i> infection by different Amazonian <i>Leishmania</i> (<i>Viannia</i>) species
O46	17.00 – 17:15	Cecilia Stahl Vieira	Azadirachtin disrupts ecdysone signaling and alters <i>P. perniciosus</i> immunity
O47	17.15 – 17:30	Erich Telleria	Surface molecules from <i>Leishmania</i> and bacteria increase the expression of sand fly genes coding for antimicrobial peptides and gut surface proteins
O48	17:30 – 17:45	Yara Traub-Cseko	Uncovering the secrets of vector competence focusing on two Amazonian sand fly populations from leishmaniasis endemic and non-endemic areas
O49	17:45 – 18:00	Barbora Vojtková	Infectiousness of natural hosts of <i>Leishmania major</i> to sand flies at micro- and macro-scale
18:45		BUS transfer to the restaurant	
19:30	GALA DINNER		

13 FRIDAY

8:30 – 10:30

Sand fly taxonomy, distribution, surveillance 1

Chairs: Padet Siriyasatien /Jerome Depaquit

O50	8:30 – 8:45	Jerome Depaquit	Thoughts about the very complicated taxonomy of South-East Asian sandflies
O51	8:45 – 9:00	Huicong Ding	Hidden in plain sight: discovery of phlebotomine sandflies in Singapore and description of four species new to science
O52	9:00 – 9:15	Thanapat Pataradool	Suspected novel species of Phlebotomine sand flies (Diptera: Psychodidae) from Uthai Thani province, Thailand, and its potential role in <i>Trypanosoma</i> sp. transmission
O53	9:15 – 9:30	Khamsing Vongphayloth	Analysis of phlebotomine sandflies (Diptera: Psychodidae) in Laos from 2012-2024 identifies new species, and diverse taxa
O54	9:30 – 9:45	Stavroula (Evi) Gouzelou	Sand fly fauna investigation in refugee camps and emerging <i>L. tropica</i> foci in Cyprus
O55	9:45 – 10:00	Alessandro Alvaro	Investigations on the presence of sand fly species (Diptera: Psychodidae) in northern Italy and on the prevalence of <i>Leishmania</i> spp. in sand flies and reptile hosts
O56	10:00 – 10:15	Ina Hoxha	Sand flies (Diptera: Phlebotominae) in the Republic of Kosovo: distribution, ecology and pathogen circulation
O57	10:15 – 10:30	Fátima Amaro	National Surveillance Network for sandflies in Portugal: the importance of monitoring a less known vector

10:30 – 11:00		COFFEE BREAK	
11:00 – 12:30		Sand fly taxonomy, distribution, surveillance 2 Chair: Vit Dvorak	
O58	11:00 – 11:15	Eduardo Berriatua	Assessing Sand Fly Vector Distributions in Spain to Predict <i>Leishmania</i> and <i>Phlebovirus</i> Infection Risks: Insights from the CLIMOS Project
O59	11:15 – 11:30	Jamila Ghrab	<i>Sergentomyia ssp</i> in the Tunisian <i>Leishmania major</i> focus of Sidi Bouzid: Diversity and <i>Leishmania</i> infection
O60	11:30 – 11:45	Kamal Eddine Benallal	Sand fly fauna in leishmaniasis foci in Algeria: Species composition and blood meal sources studied by complementary techniques
O61	11:45 – 12:00	Petr Halada	MALDI-TOF MS protein profiling: A promising tool for identification of sibling species within the <i>Phlebotomus perniciosus/longicuspis</i> complex
O62	12:00 – 12:15	Ognyan Mikov	First report of a cavernicolous population of <i>Phlebotomus neglectus</i> (Diptera: Psychodidae) breeding at suboptimal temperatures in a karst tourist cave in Bulgaria
O63	12:15 – 12:30	Tarcísio Milagres	Flebocollect project: citizen science as a tool to enhance sand fly surveillance and community engagement in Spain
12:30 – 14:00		LUNCH (News Café Bernardin)	
14:00 – 15:30		Sand fly taxonomy, distribution, surveillance 3 Chair: Yusuf Ozbel	
O64	14:00 – 14:15	Bruno Rodrigues	Hidden diversity in Monticola Series (Diptera, Psychodidae, Phlebotominae)
O65	14:15 – 14:30	Katharina Platzgummer	Sand fly research in Central Europe – the past, the present and the future
O66	14:30 – 14:45	Jorian Prudhomme	Phlebotomine sandflies distribution and abundance in France: a systematic review

O67

14:45 – 15:00

Ilaria Bernardini

Phlebotomus perfiliewi as incriminated
vector species in endemic area of Tuscany
region (Central Italy)

15:30 – 16:00

FAREWELL CLOSING

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Abstract

Phlebotomine sand flies (Diptera: Phlebotominae) are small, hematophagous insects and the principal vectors of *Leishmania* spp. and phleboviruses. Sand fly-borne diseases are highly endemic in the Balkans but often understudied. In our study, we aimed to update the known sand fly distribution in the Republic of Kosovo, assess the factors influencing their presence, and evaluate local pathogen circulation. To address this, two sand fly surveys using CDC light traps were conducted in understudied regions of Kosovo in 2022 and 2023. Morphological identification was confirmed by barcoding, and host-feeding preferences were assessed by blood meal analysis. PCR-based methods and sequencing were used to screen for *Leishmania* spp. and phleboviruses. Additional occurrence data from two previous surveys were incorporated to generate distribution maps and conduct environmental analyses. Altogether, more than 3500 sand flies were caught in all seven regions of Kosovo, and barcodes of eight endemic species were generated. Environmental analyses identified two geographical groups with notable differences between species. We analyzed blood meals of five sand fly species, identifying seven different host species, with *Ph. neglectus* and *Ph. perfliewi* being the most prevalent species. *Leishmania* DNA was amplified from two sand fly species and further molecularly characterized as *L. infantum*, and three phleboviruses belonging to different serogroups were identified. This study provides the to date most comprehensive sand fly survey and mapping of the currently known distribution in Kosovo. By combining environmental, blood meal analyses and pathogen screening, we identified factors influencing sand fly occurrence and hotspots of pathogen circulation.

Keywords: Phlebotominae, *Leishmania*, Phlebovirus, Kosovo