London School of Hygiene & Tropical Medicine
Keppel Street, London WC1E 7HT
Tel 020 7927 2337 Fax 020 7636 8739
E-mail: mary.cameron@lshtm.ac.uk
http://www.lshtm.ac.uk/people/cameron.mary

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Faculty of Infectious and Tropical Diseases
Department of Disease Control

Prof. RNDr. Jan Tacezy
Head of the habilitation commission

18th October 2019

Dear Professor Tachezy,

It gave me great pleasure to **review the habilitation thesis of RNDr. Jovana Sádlová** for consideration for the title of Associate Professor. Although I have contributed to several review panels for the promotion of academic staff in different faculties in the UK, this is the first time when I have been asked to make an assessment on a thesis alone. I shall make my judgement based on the expectations of an Associate Professor at the London School of Hygiene & Tropical Medicine, under the relevant category of knowledge generation, which are: *"contributions, including as lead, to peer-reviewed outputs, as expected by the subject area/discipline in terms of types and volume of output;* ***significant contributions to at least four outputs within the most recent 3 years that are at least internationally excellent*** *(i.e. of a quality that would be rated highly in assessments of research quality, by the UK REF procedure and in peer review processes used by funders)".*

I regret that I am unable to comment on sections 1-3 of the thesis because I do not understand the Czeck language. Therefore, my assessment is only made on the papers selected in the thesis and a Web of Science (WOS) Search that I performed on 11th October 2019. The search found 37 publications authored by Jovana Sádlová between 1998-2019 which, in total, were cited 689 times (H-index=17), and 30 of these were listed as journal articles.

Prvoci rodu *Leishmania* (Kinestoplastida: Trypansomatidae): interakce s přenašeči a hostiteli

Jovana is the first author of 19 out of 30 publications, listed as journal articles in WOS, published over 15 years (2004-2019). It is evident that Jovana's publication rate has increased dramatically over the last 5 years (6 papers between 2004-9, 7 papers between 2010-2015 and 17 papers between 2015-2017).

Jovana has included 21 of 30 journal articles in the habilitation thesis to be considered for the title of Associate Professor. The 9 papers not included in the thesis are listed in Appendix 1.

The thesis papers fall in to several categories concerning different aspects of Leishmaniasis transmission: vector/parasite interactions, metacyclogenesis, *Leishmania* hybrids, the potential role of alternative vectors in transmission and vector/parasite/host interactions. A general evaluation of each of the 21 selected papers, concluding with how they have added to the scientific body of research in terms of their originality, significance and rigour, with reference to international research quality standards, is provided below. The REF 2021 scoring criteria has been used in an attempt to make the assessment as objective as possible.

The REF 2021 scoring criteria for assessing the quality of publications on 'originality, significance and rigour' are provided below:

Four star	Quality that is world-leading in terms of originality, significance and rigour.
Three star	Quality that is internationally excellent in terms of originality, significance and rigour but which falls short of the highest standards of excellence.
Two star	**Quality that is recognised internationally in terms of originality, significance and rigour.**
One star	Quality that is recognised nationally in terms of originality, significance and rigour.
Unclassified	Quality that falls below the standard of nationally recognised work. Or work which does not meet the published definition of research for the purposes of this assessment.

The types of characteristics used to decide which scoring criteria a publication is classed is provided in Appendix 2. Note that it is very difficult for researchers to obtain publications in the categories of three and four stars. Papers in these categories need demonstrate a paradigm shift and/or affect policy. A predominance of publications categorised as two stars is seen as acceptable for an Associate Professor.

Vector/Parasite Interactions

P1. VOLF, P., HAJMOVA, M., SADLOVA, J. & VOTYPKA, J. 2004. Blocked stomodeal valve of the insect vector: similar mechanism of transmission in two trypanosomatid models. *International Journal for Parasitology,* 34**,** 1221-1227.

This is Jovana's pioneer work in this area of research. The paper advances the subject area by showing that the phenomenon of a blocked stomodeal valve facilitating transmission of trypanosomatid parasites, through regurgitation, is more general than previously thought. The mechanism was demonstrated using several Dipteran vectors and has inspired future researchers. Following on from this, the group conducted the study below. The specific contribution of Sadlova to the study was not provided in the manuscript. The work was published in a peer-reviewed journal ranked 6 of 37 in the category of Parasitology with a 5-year impact factor of 3.864. Total times cited: 43

Assessment: 2 star

P2. ROGERS, M. E., HAJMOVA, M., JOSHI, M. B., SADLOVA, J., DWYER, D. M., VOLF, P. & BATES, P. A. 2008. *Leishmania chitinase* facilitates colonization of sand fly vectors and enhances transmission to mice. *Cellular Microbiology,* 10**,** 1363-1372.

This research advances the findings in the above paper by showing that *Leishmania* chitinase enzymes enhance transmission further. Chitinases were shown to enable parasites to colonize the anterior midgut of the sandfly more quickly, modify the stomodeal valve and affect blood feeding. The specific contribution of Sadlova to the study was not provided in the mansucript. The work was published in a peer-reviewed journal ranked 31 of 133 in the category of Microbiology with a 5-year impact factor of 4.044. Total Times Cited: 42

Assessment: 2 star

P3. SADLOVA, J. & VOLF, P. 2009. Peritrophic matrix of *Phlebotomus duboscqi* and its kinetics during *Leishmania major* development. *Cell and Tissue Research,* 337**,** 313-325.

The work presented in this paper stimulated other researchers to re-evaluate the way that they considered *Leishmania* development. Previously, most focus was directed on how parasites get transmitted to hosts. Here, the authors used traditional microscopy methods and electron microscopy to shed light on how parasites establish an infection by surviving defaecation when the peritrophic membrane is broken down, and how forward migration of different parasite stages is controlled. The specific contribution of Sadlova to the study was not provided in the manuscript. The work was published in a peer-reviewed journal ranked 104 of 193 in the category of Cell Biology with a 5-year impact factor of 3.158. Total Times Cited: 26

Assessment: 2 star

P4. SADLOVA, J., DVORAK, V., SEBLOVA, V., WARBURG, A., VOTYPKA, J. & VOLF, P. 2013. *Sergentomyia schwetzi* is not a competent vector for *Leishmania donovani* and other *Leishmania* species pathogenic to humans. *Parasites & Vectors,* 6.

Following on from P3, looking at the importance of the peritrophic membrane breakdown in relationship to *Leishmania* survival and development, the authors examined the role of the peritrophic membrane in determining whether a *Leishmania* infection established in sandfly species not known to transmit Leishmania pathogenic to humans versus known vectors. Crucially, they found that refractoriness of *Sergentomyia schwetzi* to human *Leishmania* species is influenced by the relative timing of bloodmeal defecation versus peritrophic membrane degradation. Sadlova contributed to performing the study, statistical analysis and drafting the manuscript. The work was published in a peer-reviewed journal ranked 8 of 37 in the category of Parasitology with a 5-year impact factor of 3.342. Total Times Cited: 35

Assessment: 2 star

P5. PRUZINOVA, K., SADLOVA, J., SEBLOVA, V., HOMOLA, M., VOTYPKA, J. & VOLF, P. 2015. Comparison of Bloodmeal Digestion and the Peritrophic Matrix in Four Sand Fly Species Differing in Susceptibility to *Leishmania donovani*. *Plos One,* 10.

Progressing from the research findings of P4, the authors performed supplementary research to support their earlier work. They found that the time frame when *Leishmania* attach to the midgut in order to prevent defecation (period between the breakdown of the peritrophic membrane and defaecation of the bloodmeal remnants) is longer for natural vectors of *Leishmania donovani* than in refractory vectors. Sadlova contributed to the design of the experiments, performing the study, analysing data and writing of the manuscript. The work was published in a peer-reviewed journal ranked 24 of 69 in the category of Multidisciplinary Sciences with a 5-year impact factor of 3.337. Total Times Cited: 11

Assessment: 2/3 star

P6. SADLOVA, J., HOMOLA, M., MYSKOVA, J., JANCAROVA, M. & VOLF, P. 2018. Refractoriness of *Sergentomyia schwetzi* to *Leishmania* spp. is mediated by the peritrophic matrix. *Plos Neglected Tropical Diseases,* 12.

This work ties together the importance of the peritrophic membrane and chitinases in the establishment of a *Leishmania* infection in a sandfly vector. As first author, Sadlova conceptualised the study, obtained funding, performed the investigation and wrote the first draft of the manuscript. It was published in a peer-reviewed journal ranked 5 of 37 in the category of Parasitology with a 5-year impact factor of 4.718. Total Times Cited: 1

Assessment: 2/3 star

P7. PRUZINOVA, K., SADLOVA, J., MYSKOVA, J., LESTINOVA, T., JANDA, J. & VOLF, P. 2018. *Leishmania* mortality in sand fly blood meal is not species-specific and does not result from direct effect of proteinases. *Parasites & Vectors,* 11.

The most recent paper published in this subject area described that, contrary to other research groups who showed that sandfly gut proteases are harmful to Leishmania, data produced in the study herein suggest that *Leishmania* mortality results from toxic products of blood meal digestion rather than caused directly by sandfly proteases. Sadlova contributed to performing the study, statistical analysis and revising the manuscript. The work was published in a peer-reviewed journal ranked 8 of 37 in the category of Parasitology with a 5-year impact factor of 3.342. Total Times Cited: 4

Assessment: 2/3 star

Metacyclogenesis

P8. SADLOVA, J., PRICE, H. P., SMITH, B. A., VOTYPKA, J., VOLF, P. & SMITH, D. F. 2010. The stage-regulated HASPB and SHERP proteins are essential for differentiation of the protozoan parasite *Leishmania major* in its sand fly vector, *Phlebotomus papatasi*. *Cellular Microbiology,* 12**,** 1765-1779.

The research is novel because the role of HASPB and SHERP, predominantly expressed in cultured metacyclic parasites, had not been previously studied in parasite development in the sandfly vector. It confirmed that

expression of HASPB is detected only in vector metacyclic stages, whereas SHERP is expressed both in vector metacyclics and at low levels in the preceding short promastigote stage. The specific contribution of Sadlova to the study has not been provided. The work was published in a peer-reviewed journal ranked 31 of 133 in the category of Microbiology with a 5-year impact factor of 4.044. Total Times Cited: 41
Assessment: 2 star

P9. DOEHL, J. S. P., SADLOVA, J., ASLAN, H., PRUZINOVA, K., METANGMO, S., VOTYPKA, J., KAMHAWI, S., VOLF, P. & SMITH, D. F. 2017. Leishmania HASP and SHERP Genes Are Required for In Vivo Differentiation, Parasite Transmission and Virulence Attenuation in the Host. *Plos Pathogens,* 13.

This study demonstrates, for the first time, stage-regulated expression of the small HASPA proteins in Leishmania (Leishmania) and suggests that HASPAs may have a role in host immunomodulation. Sadlova contributed to the study by performing part of the investigation and analysis. The work was published in a peer-reviewed journal ranked 3 of 37 in the category of Parasitology with a 5-year impact factor of 6.946. Total Times Cited: 4
Assessment: 2/3 star

P10. SADLOVA, J., MYSKOVA, J., LESTINOVA, T., VOTYPKA, J., YEO, M. & VOLF, P. 2017. *Leishmania donovani* development in *Phlebotomus argentipes*: comparison of promastigote- and amastigote-initiated infections. *Parasitology,* 144**,** 403-410.

The most important impact of this study was that it showed that future studies focusing on early phase of *Leishmania* development in sandflies should use intracellular rather than promastigote stages. The specific contribution of Sadlova to the study has not been provided. The work was published in a peer-reviewed journal ranked 13 of 37 in the category of Parasitology with a 5-year impact factor of 2.54. Total Times Cited: 6
Assessment: 1-2 star

***Leishmania* hybrids**

P11. VOLF, P., BENKOVA, I., MYSKOVA, J., SADLOVA, J., CAMPINO, L. & RAVEL, C. 2007. Increased transmission potential of *Leishmania major/Leishmania infantum* hybrids. *International Journal for Parasitology,* 37**,** 589-593.

This is a brief but impactful study looking at the development of *Leishmania infantum/Leishmania* major hybrids in two sand fly species: *Phlebotomus papatasi*, which supported development of *L. major* but not *L. infantum*, and the permissive vector *Lutzomyia longipalpis*, where all *Leishmania* strains included in this study developed well. The genetic exchange of the hybrids appeared to enhance transmission which could have serious consequences. The specific contribution of Sadlova to the study has not been provided. The work was published in a peer-reviewed journal ranked 6 of 7 in the category of Parasitology with a 5-year impact factor of 3.863. Total Times Cited: 81
Assessment: 2 star

P12. VOLF, P. & SADLOVA, J. 2009. Sex in *Leishmania*. *Science,* 324**,** 1644-1644.

Following on from P11, the authors briefly stated how naturally occurring interspecific *Leishmania* hybrids could expand the geographical range and lead to increased pathogenicity. They also suggest that the next research priority should be to use molecular markers to show how hybrids occur (see P13 below). Although the letter to the editor was published in a very impactful journal, it does not meet the published definition of research for the purposes of this assessment. The specific contribution of Sadlova to the letter was not provided. The letter was published in a peer-reviewed journal ranked 2 of 69 in the category of Multidisciplinary Sciences with a 5-year impact factor of 43.655. Total Times Cited: 7
Assessment: 0 star

P13. SADLOVA, J., YEO, M., SEBLOVA, V., LEWIS, M. D., MAURICIO, I., VOLF, P. & MILES, M. A. 2011. Visualisation of *Leishmania donovani* Fluorescent Hybrids during Early Stage Development in the Sand Fly Vector. *Plos One,* 6.

This study investigates the location and timing of hybridisation events in sandflies for the first time and uses transgenic promastigotes of *Leishmania donovani* strains carrying hygromycin or neomycin resistance genes and red or green fluorescent markers. Hybrids expressing both red and green fluorescence were seen in single flies. If genetic exchange in *L. donovani* occurs in the field, it could have profound epidemiological significance as described in P12. Sadlova contributed to the design of the experiments, performing the study, analysing data and writing of the manuscript. The work was published in a peer-reviewed journal ranked 24 of 69 in the category of Multidisciplinary Sciences with a 5-year impact factor of 3.337. Total Times Cited: 36

Assessment: 2/3 star

Role of "alternative" vectors in *Leishmania* transmission

P14. SEBLOVA, V., SADLOVA, J., CARPENTER, S. & VOLF, P. 2012. Development of *Leishmania* Parasites in *Culicoides nubeculosus* (Diptera: Ceratopogonidae) and Implications for Screening Vector Competence. *Journal of Medical Entomology,* 49**,** 967-970.

This study looked at whether *Culicoides nubeculosus* midges were susceptible to infection with *Leishmania infantum*. Although a polymerase chain reaction-based assay indicated the presence of L. infantum for up to 7 d after the bloodmeal, the authors stressed that direct microscopical observations should be combined with PCR in competence studies as the technique cannot be used to infer whether the parasites are viable. The specific contributions of Sadlova to the study have not been described in the manuscript. The work was published in a peer-reviewed journal ranked 23 of 98 in the category of Entomology with a 5-year impact factor of 2.015. Total Times Cited: 19

Assessment: 2 star

P15. SEBLOVA, V., SADLOVA, J., CARPENTER, S. & VOLF, P. 2014. Speculations on biting midges and other bloodsucking arthropods as alternative vectors of Leishmania. *Parasites & Vectors,* 7.

This letter follows on from P14, and stresses that PCR alone should not be used to study vector competence of "alternative vectors" because it is not possible to demonstrate that the parasites are viable. Note that, as in the case of P12, a letter in a journal does not meet the published definition of research for the purposes of this assessment. Sadlova played a role in approving the draft letter. The work was published in a peer-reviewed journal ranked 8 of 37 in the category of Parasitology with a 5-year impact factor of 3.342. Total Times Cited: 19

Assessment: 0 star

P16. SEBLOVA, V., SADLOVA, J., VOJTKOVA, B., VOTYPKA, J., CARPENTER, S., BATES, P. A. & VOLF, P. 2015. The Biting Midge *Culicoides sonorensis* (Diptera: Ceratopogonidae) Is Capable of Developing Late Stage Infections of *Leishmania enriettii*. *Plos Neglected Tropical Diseases,* 9.

This is the most comprehensive paper under this subject heading. Two species of midges*, Culicoides nubeculosus* and *C. sonorensis*, and the sandfly *Lutzomyia longipalpis* were infected with two different species of *Leishmania*, and infectivity was tested by xenodiagnoses (a gold standard technique). *Culicoides sonorensis* was found to be susceptible to *Le. enriettii* to a similar degree as *Lu. longipalpis*. Therefore, some species of biting midges could be natural vectors of the *Le. enriettii* complex. Sadlova conceived, designed and performed the experiments and analysis. The work was published in a peer-reviewed journal ranked 5 of 37 in the category of Parasitology with a 5-year impact factor of 4.718. Total Times Cited: 14

Assessment: 2/3 star

Vector/Parasite/Host Interactions

P17. MAIA, C., SEBLOVA, V., SADLOVA, J., VOTYPKA, J. & VOLF, P. 2011. Experimental Transmission of *Leishmania infantum* by Two Major Vectors: A Comparison between a Viscerotropic and a Dermotropic Strain. *Plos Neglected Tropical Diseases,* 5.

This was the first study to quantify *Leishmania infantum* parasites transmitted by natural vectors. It showed that infectious sandflies feed significantly longer on the host (1.5-1.8 times) than non-transmitting females. The maximal natural dose found was about 250 times lower than the experimental challenge dose used in previous studies. This finding is very important for future experiments. Sadlova conceived, designed and performed the experiments. The work was published in a peer-reviewed journal ranked 5 of 37 in the category of Parasitology with a 5-year impact factor of 4.718. Total Times Cited: 36

Assessment: 2/3 star

P18. SADLOVA, J., SEBLOVA, V., VOTYPKA, J., WARBURG, A. & VOLF, P. 2015. Xenodiagnosis of *Leishmania donovani* in BALB/c mice using *Phlebotomus orientalis*: a new laboratory model. *Parasites & Vectors,* 8.

The authors designed a BALB/c mouse model to enable xenodiagnostic studies on VL hosts circumventing the need for human volunteers. BALB/c mice harboured parasites in sufficient numbers to promote heavy infections in *P. orientalis*, persisted in the inoculation site and were found transmissible for months to sandflies biting on the same site. Sadlova made a substantial contribution to the conception and design of the study as well as analysis and drafting the manuscript. The work was published in a peer-reviewed journal ranked 8 of 37 in the category of Parasitology with a 5-year impact factor of 3.342. Total Times Cited: 9

Assessment: 2 star

P19. KASSAHUN, A., SADLOVA, J., DVORAK, V., KOSTALOVA, T., ROHOUSOVA, I., FRYNTA, D., AGHOVA, T., YASUR-LANDAU, D., LEMMA, W., HAILU, A., BANETH, G., WARBURG, A., VOLF, P. & VOTYPKA, J. 2015. Detection of *Leishmania donovani* and *L. tropica* in Ethiopian wild rodents. *Acta Tropica,* 145**,** 39-44.

The study aimed to determine the status of rodents as reservoirs for human VL in Ethiopia. Animals were trapped in 41 localities of endemic and non-endemic areas and *Leishmania* infection was evaluated by real-time PCR of kinetoplast (k)DNA and confirmed by sequencing of the PCR products. 8.2% of the rodent specimens were positive for Leishmania by PCR. Using sequencing, 20% of these were *Le. donovani* complex infections, and 20% *Le. tropica*. The authors suggest that rodents are likely to play a role in the transmission of leishmaniasis in Ethiopia, possibly as reservoir hosts. The specific contribution played by Sadlova is not stated in the manuscript. The work was published in a peer-reviewed journal ranked 12 of 37 in the category of Parasitology with a 5-year impact factor of 2.659. Total Times Cited: 14

Assessment: 2 star

P20. KASSAHUN, A., SADLOVA, J., BENDA, P., KOSTALOVA, T., WARBURG, A., HAILU, A., BANETH, G., VOLF, P. & VOTYPKA, J. 2015. Natural infection of bats with Leishmania in Ethiopia. *Acta Tropica,* 150**,** 166-170.

The authors undertook a similar study to P19, but examined bats collected from various regions of Ethiopia for *Leishmania* infection in bats. This was the first confirmed observation of natural infection of bats with Old World *Leishmania.* The specific contribution played by Sadlova is not stated in the manuscript. The work was published in a peer-reviewed journal ranked 12 of 37 in the category of Parasitology with a 5-year impact factor of 2.659. Total Times Cited: 12

Assessment: 1-2 star

P21. SADLOVA, J., VOJTKOVA, B., HRNCIROVA, K., LESTINOVA, T., SPITZOVA, T., BECVAR, T., VOTYPKA, J., BATES, P. & VOLF, P. 2019. Host competence of African rodents *Arvicanthis neumanni*, *A. niloticus* and *Mastomys natalensis* for *Leishmania major*. *International Journal for Parasitology-Parasites and Wildlife,* 8**,** 118-126.

This is a comprehensive study of experimental infections of three *L. major strains* using three species of African rodents. Inoculated rodents were monitored for several months and tested by xenodiagnoses for

their infectiousness to *Phlebotomus duboscqi*. The authors suggest that *Mastomys natalensis* may play a more important reservoir role in the life cycle of *L. major* in Sub-Saharan Africa than *Arvicanthis* species, but they may also serve as potential reservoirs in seasons/periods of low abundance of *Mastomys*. The specific contribution played by Sadlova is not stated in the manuscript. The work was published in a peer-reviewed journal ranked 16 of 37 in the category of Parasitology with a 5-year impact factor of 2.659. Total Times Cited: 0

Assessment: 2 star

Assessment Conclusions

- The collection of 21 papers presented in the thesis form a coherent body of work that adds a significant contribution to different components of vector/parasite/host interactions and increases scientific knowledge of *Leishmania* transmission.
- The publications are in peer-reviewed journals appropriate for the field of research. Apart from P19, P20 and P21, all of the remaining 18 papers are ranked in the first quartile of relevant categories (Parasitology, Entomology, Microbiology, Cell Biology or Multidisciplinary Sciences). Therefore, I am satisified that her work is considered as robust in the international scientific community.
- Although it is not specified in all of the papers, the position of authors for each publication reflects the contribution made by each researcher. Jovana is the first author of 9/21 of the publications included in the thesis, and I am satisfied that she has made a significant contribution to each study.
- Jovana has acquired international standing in her area of research. She has collaborated with many different research groups working in a similar field and has built a strong network. She has also contributed to obtaining grant funding from several funding bodies.
- Two of the publications presented in the thesis are letters to journals (P12 & P15), and do not meet the published definition of research for the purposes of this assessment. However, of the remaining 19 articles, 17 can be considered to be at the level of 2* or above. Therefore, I am satisfied that Jovana meets the criteria required to be appointed at the level of Associate Professor at any international research-led university.
- In conclusion, my recommendation is to grant the title of Associate Professor to Jovana Sádlová.

Yours sincerely,

Prof Mary M Cameron

Appendix 1: Other journal articles authored by Jovánа Sádlová that were identified by a search on Web Of Science but were not included in the thesis for consideration

AGHOVA, T., PALUPCIKOVA, K., SUMBERA, R., FRYNTA, D., LAVRENCHENKO, L. A., MEHERETU, Y., SADLOVA, J., VOTYPKA, J., MBAU, J. S., MODRY, D. & BRYJA, J. 2019. Multiple radiations of spiny mice (Rodentia: Acomys) in dry open habitats of Afro-Arabia: evidence from a multi-locus phylogeny. *Bmc Evolutionary Biology,* 19.

BENEKE, T., DEMAY, F., HOOKWAY, E., ASHMAN, N., JEFFERY, H., SMITH, J., VALLI, J., BECVAR, T., MYSKOVA, J., LESTINOVA, T., SHAFIQ, S., SADLOVA, J., VOLF, P., WHEELER, R. J. & GLUENZ, E. 2019. Genetic dissection of a Leishmania flagellar proteome demonstrates requirement for directional motility in sand fly infections. *Plos Pathogens,* 15.

CHAJBULLINOVA, A., VOTYPKA, J., SADLOVA, J., KVAPILOVA, K., SEBLOVA, V., KREISINGER, J., JIRKU, M., SANJOBA, C., GANTUYA, S., MATSUMOTO, Y. & VOLF, P. 2012. The development of Leishmania turanica in sand flies and competition with L. major. *Parasites & Vectors,* 5.

FLEGONTOV, P., BUTENKO, A., FIRSOV, S., KRAEVA, N., ELIAS, M., FIELD, M. C., FILATOV, D., FLEGONTOVA, O., GERASIMOV, E. S., HLAVACOVA, J., ISHEMGULOVA, A., JACKSON, A. P., KELLY, S., KOSTYGOV, A. Y., LOGACHEVA, M. D., MASLOV, D. A., OPPERDOES, F. R., O'REILLY, A., SADLOVA, J., SEVCIKOVA, T., VENKATESH, D., VLCEK, C., VOLF, P., VOTYPKA, J., ZAHONOVA, K., YURCHENKO, V. & LUKES, J. 2016. Genome of Leptomonas pyrrhocoris: a high-quality reference for monoxenous trypanosomatids and new insights into evolution of Leishmania. *Scientific Reports,* 6.

FRYNTA, D., KAFTANOVA-ELIASOVA, B., ZAMPACHOVA, B., VORACKOVA, P., SADLOVA, J. & LANDOVA, E. 2018. Behavioural strategies of three wild-derived populations of the house mouse (Mus m. musculus and M. m. domesticus) in five standard tests of exploration and boldness: Searching for differences attributable to subspecies and commensalism. *Behavioural Processes,* 157**,** 133-141.

GUIMARAES, A. C., NOGUEIRA, P. M., SILVA, S. D., SADLOVA, J., PRUZINOVA, K., HLAVACOVA, J., MELO, M. N. & SOARES, R. P. 2018. Lower galactosylation levels of the Lipophosphoglycan from Leishmania (Leishmania) major-like strains affect interaction with Phlebotomus papatasi and Lutzomyia longipalpis. *Memorias Do Instituto Oswaldo Cruz,* 113.

GUIMARAES, V., PRUZINOVA, K., SADLOVA, J., VOLFOVA, V., MYSKOVA, J., BRANDAO, S. P. & VOLF, P. 2016. Lutzomyia migonei is a permissive vector competent for Leishmania infantum. *Parasites & Vectors,* 9.

NOGUEIRA, P. M., GUIMARAES, A. C., ASSIS, R. R., SADLOVA, J., MYSKOVA, J., PRUZINOVA, K., HLAVACKOVA, J., TURCO, S. J., TORRECILHAS, A. C., VOLF, P. & SOARES, R. P. 2017. Lipophosphoglycan polymorphisms do not affect Leishmania amazonensis development in the permissive vectors Lutzomyia migonei and Lutzomyia longipalpis. *Parasites & Vectors,* 10.

SADLOVA, J., VOLF, P., VICTOIR, K., DUJARDIN, J. C. & VOTYPKA, J. 2006. Virulent and attenuated lines of Leishmania major: DNA karyotypes and differences in metalloproteinase, GP63. *Folia Parasitologica,* 53**,** 81-90.

Appendix 2: Characteristics used to decide which scoring criteria a publication is classed is provided.

Four star (world leading)	• agenda-setting • research that is leading or at the forefront of the research area • great novelty in developing new thinking, new techniques or novel results • major influence on a research theme or field • developing new paradigms or fundamental new concepts for research • major changes in policy or practice • major influence on processes, production and management • major influence on user engagement.
Three star (internationally excellent)	• makes important contributions to the field at an international standard • contributes important knowledge, ideas and techniques which are likely to have a lasting influence, but are not necessarily leading to fundamental new concepts • significant changes to policies or practices • significant influence on processes, production and management • significant influence on user engagement.
Two star (internationally recognised)	• provides useful knowledge and influences the field • involves incremental advances, which might include new knowledge which • conforms with existing ideas and paradigms, or model calculations using established techniques or approaches • influence on policy or practice • influence on processes, production and management • influence on user engagement.
One star (nationally recognised)	• useful but unlikely to have more than a minor influence in the field • minor influence on policy or practice • minor influence on processes, production and management • minor influence on user engagement.
Unclassified	• Work that falls below the quality levels described above or does not meet the definition of research used for the REF.