



## ANNOUNCEMENT OF AN INTERNATIONAL CALL FOR THE SELECTION OF TWO TECHNICIANS

Internal code: **Technician\_2/FCT\_Proj2020/i3S/2103/2024**

A call is opened for the position of two Research Technicians, for an unfixed term work contract, to carry out technical duties within the project "Exosomes as a source of new molecular biomarkers for Canine Leishmaniasis", with reference PTDC/CVT-CVT/6798/2020, funded by Fundação para a Ciência e Tecnologia.

**Scientific Area:** Biomedical Sciences

### 1. Project summary and work plan

Vector borne Canine leishmaniasis (CanL) caused by *Leishmania infantum* protozoan parasites is a major concern for the veterinary community, having high mortality and morbidity rates. Moreover, in endemic areas, domestic dogs are the primary target of infection allowing perpetuation of the life cycle associated. The relation between CanL and human zoonotic visceral leishmaniasis (HZVL) has been demonstrated, establishing CanL as a risk for HZVL. Considering the zoonotic potential of leishmaniasis, the control of *Leishmania* infection in the animal reservoirs is essential for the One Health concept. In southern Europe, up to 70% of cases of HZVL in adults are associated to HIV infection. In fact, concomitant infection increased the risk of developing VL by 100 to 2320 times. In this scenario the estimation of *Leishmania* infection in dogs is essential not only for CanL management but also for the establishment of zoonotic risk. The available tools for infection management are adequate for detection of disease, (in conjunction with clinical evaluation) but present limitations for diagnosis of infection in asymptomatic dogs. Therefore, the information of real prevalence of infection and overall burden of disease is believed to be grossly underestimated. The molecular detection (PCR) of asymptomatic animals is difficult because parasites are not homogeneously distributed and parasite rich regions to access. The alternative is the use of serological approaches that are considered sub-optimal to detect asymptomatic infections. Therefore, new approaches to detect infection are essential for infection management. Ideally, these new approaches should lead to the establishment of molecular signatures that can be predictive of *Leishmania* infection. In this context, extracellular vesicles (EVs) are a still untapped resource with great potential. EVs are small lipidic vesicles of cellular origin, present in all biological fluids. EVs have been described in mammalian cells and several pathogenic microorganisms, including eukaryotic unicellular parasites. Several studies have shown that EVs contain proteins and nucleic acids, which act as intercellular communicators, involved in many disorders, including infectious diseases. In fact, in the last decade, research on the biology, function and potential applications of EVs has grown exponentially. A significant part of the work done in this area has shown that, perhaps the most important biomedical utility of the EVs is its potential as biomarkers in clinical diagnostic. Compared to other conventional soluble biomarkers detected in biological samples, the EVs provide the promise of specificity and sensitivity comparable, or even higher, due to their excellent biological stability. Moreover, EVs

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can be recovered from easily obtained biofluids such as blood, saliva, tears or urine making them invaluable in clinical applications. The proponent team presents a unique conjugation of know-how in the search for new biomarkers in leishmaniasis and also were in the frontline of EVs research in Leishmania. This is unique conjunction of expertise and the accessibility to relevant biological samples makes ExoCanLeish uniquely poised to find EVs related biomarkers that might be used in CanL. To address this, a particular type of EVs, the exosomes, will be recovered from plasma of diseased dogs using size exclusion chromatography, evaluated for the presence of exosome specific markers, characterized by nanoparticle tracking analysis and transmission electron microscopy and will undergo proteomic characterization focused primarily on the search for Leishmania proteins. The most promising protein hits will undergo a biomarker development program that will include the production of the target proteins in *Leishmania tarentolae*, the production of antibodies that will be used to select the appropriate approach to detect the proposed biomarker proteins (ELISA, Western Blot) in exosomes recovered from plasma aiming at a final validation in a cohort of 200 dogs. The available promising preliminary data from dogs with CanL suggest that the proposed project will not only lead to the discovery of novel disease related bio-markers but also contribute to a better understanding of CanL. The scope of these discoveries are likely to transcend the veterinary use as the EVs derived biomarkers have high probability of being valid in other contexts of Leishmania infection.

## 2. Jury

Chairman: Anabela Cordeiro da Silva; Other Members:, Ana Isabel Pinto; Nuno Santarém; Substitute: Joana Tavares.

## 3. Workplace

i3S - Rua de Alfredo Allen, 208 Porto, research group Host-Parasite Interactions.

## 4. Professional category and monthly remuneration

Research Technician, €1.508,79

## 5. Obligatory requirements for admission

1. A degree or master degree in Health and Life Sciences or related scientific areas;
2. Motivation letter.

### It will also be subjected to valorization:

- Scientific and technological production, including oral/poster communications, publications and impact factors
- Laboratorial experience in Biomedical Sciences or a related discipline associated to the participation in research projects.
- Hands-on experience in techniques related to Extracellular Vesicles purification and characterization
- Hands-on experience in cell culture
- Hands-on experience in BSL-2 conditions
- Hands-on experience in working with *Leishmania*



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- Knowledge in *Leishmania* biology and Leishmaniasis
- Hands-on experience in ELISA, Western blotting and Flow-Cytometry.
- Hands on experience in Molecular Biology and Protein purification.
- Fluent in spoken and written English
- Immediate availability to start the contract, with a maximum duration of 8 months.

## 6. Evaluation of the applications and publication of the results

### Weight of the different curricular valuation criteria

#### a) Detailed Curricula (65%):

- Relevant laboratorial experience in the research area of the application and the valued topics (40%)
- Scientific and technological production, including oral/poster communications, publications and impact factors (20%)
- Participation in research projects (5%)

#### b) Motivation Letter (25%)

- Interest and motivation for the research area framing the position to be hired.

#### c) Interview (10%)

If the jury decides to obtain further clarifications and additional information about the curricular elements presented, the best candidates classified on the basis of the curriculum and motivation letter may be called for an interview. In this case, the curricular evaluation will weight 90% for all candidates and the interview will weight 10%.

Candidates are excluded from admission to this call if they do not fill out their application correctly or do not meet the obligatory admission requirements. If in doubt, the jury may ask any candidate additional documents in support of their statements.

False statements made by candidates will be sanctioned in accordance with the law.

The jury will draw up minutes of its meetings, which can be consulted at the candidate's request within 10 working days after the selection results are released.

The jury deliberates by means of a reasoned vote according to the evaluation criteria, with no abstentions allowed, and draws up a list of excluded and admitted candidates, ordered by respective classification.



All candidates are notified of the selection results by email. After notification, candidates have 10 working days to comment.

In the 90 days following the deadline for submission of applications, the jury's final decision is made. Subsequently the institute Director, who is also responsible for the final decision of hiring, will ratify the decision of the jury.

This call is intended exclusively to fill the indicated position on offer and may be canceled before the final results are ratified by the Director. Accordingly, the position will no longer be available.

### **7. Submission of applications**

Applications must include all the documents proving that they fulfill the admission requirements, namely:

- a) Copy of certificate or diploma;
- b) Detailed Curriculum Vitae;
- c) Motivation letter

The submission of applications is digital, in pdf format, from 21 March to 4 April 2023, in the following link:

<https://dozer.i3s.up.pt/applicationmanagement/#/addapplications/f3184787ee23d176baa549e51bafd74>

### **8. Start and duration of the contract**

The anticipated start date of the contracts is 01/05/2024 and are subject to budget availability. The maximum duration of the contracts will be 8 months.

### **9. Non-discrimination and equal access policy**

i3S actively promotes a policy of non-discrimination and equal access. No applicant shall be privileged, benefited, prejudiced, or deprived of any right or exempted from any duty on the basis of ancestry, age, gender, sexual orientation, marital status, family situation, economic situation, education, origin or social condition, genetic heritage, reduced work capacity, disability, chronic illness, nationality, ethnic origin or race, territory of origin, language, religion, political or ideological beliefs, or trade union membership.

Within the framework of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers, i3S adopts the Open, Transparent and Merit-based (OTM-R) principles for the recruitment of researchers, with the aim of conducting fair and transparent recruitment processes, bringing equal opportunities to all candidates.

### **10. Applicants with disabilities**

Under the terms of Decree-Law 29/2001, of February 3, the candidate with a disability is given preference in equal ranking, which takes precedence over any other legal preference. Candidates must declare under oath their degree of disability, the type of

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disability and the means of communication/expression to be used in the selection process, under the terms of the aforementioned decree.



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