Research fellowship on "Characterization and identification of bacterial species of the intestinal microbiota involved in the inhibition of COVID-19"
Università Ca' Foscari Venezia

(Italian law 30 December 2010, n.240, art. 22 and subsequent amendments and additions)

The present document in English is to be considered as a mere summary of the main provisions of the notice of competition which is available in Italian at the following (link) The text in Italian is the official text of the notice of competition for all legal intents and purposes and, in the event of non-conformity with the present document, it shall prevail.

Description

The Department of Molecular Sciences and Nanosystems at Università Ca' Foscari Venezia invites applications for a fellowship lasting 22 months titled "Characterization and identification of bacterial species of the intestinal microbiota involved in the inhibition of COVID-19", SSD: BIO/19, project PRIN PNRR 2022 titled "Gut microbiome ecology and evolution during COVID-19 infection", cod. P2022LWX99, CUP H53D23007220001, tutor and principal investigator: dr.ssa Sabrina Tamburini.

The fellowship is intended to provide the successful candidate with the opportunity to pursue his/her own research while benefiting from the range of expertise at Università Ca' Foscari Venezia.

Title: Characterization and identification of bacterial species of the intestinal microbiota involved in the inhibition of COVID-19

Abstract

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), responsible for the outbreak of coronavirus disease 2019 (COVID-19) spread globally infecting more than 600 million people and causing 6.5 million deaths, with 180,000 deaths only in Italy (November 2022; WHO website). Although the viral infection has been mainly linked with respiratory disorders, 11-39% of SARS-CoV-2 patients have shown gastrointestinal (GI) symptoms, including nausea, vomiting, diarrhea, abdominal pain and a gut microbiome dysbiosis with a reduction in potential immunoregulatory beneficial bacteria and severity of the disease. In addition, in some patients it has been shown that gut microbiome perturbation and GI symptoms persist for weeks/months after infection.

In this project, we propose an experimental and computational framework with the aim of studying the interaction between gut microbiome and SARS-CoV-2 infection. This will be accomplished by four main tasks.

-evolution characterization and stability of the viable intestinal microbiota in an anaerobic bioreactor system

- characterization of the virus-microbiota interaction and decay kinetics of SARS-CoV-2 in the intestinal microbiome

-isolation and characterization of bacterial strains involved in the interaction with SARS-CoV-2

-characterization of the host response during microbiota-SARS-CoV-2 interaction in an in vitro intestinal system.

The project is divided into Working packages (WP):

WP1. Ecology of viable gut microbiome in a bioreactor system
1.1. Metagenomic analysis of gut microbiome composition in healthy donors;
1.2. Set up of the anaerobic bioreactor to simulate a human colon;
1.3. Monitoring the microbiome stability in the bioreactor system of selected donors.

WP2. Virus-microbiome interaction and kinetics of decay of SARS-CoV-2 in gut microbiome
2.1. Characterization of interactions between microbial isolates and SARS-CoV-2 in plates;
2.2. Characterization of interactions between microbiome and SARS-CoV-2 in plates;
2.3. Dynamics of interactions between microbiome and SARS-CoV-2 in a bioreactor system.

WP3. Host-gut microbiome response to SARS-CoV-2 in a gut *in-vitro* system
3.1. Interaction between gut isolates and host *in-vitro* gut system
3.2. Interaction between *in-vitro* gut system and gut microbiome
3.3. Host response in microbiome-virus-host *in-vitro* system

WP4. Validation on publicly available shotgun metagenomic datasets
4.1. Literature screening and metagenomic data retrieval;
4.2. Metagenomic data processing for strain-level and functional characterization;
4.3. Validation of microbial biomarkers in public metagenomes;

WP5. Coordination and integration
WP6 Communication and dissemination

The work will take place at the Department of Molecular Sciences and Nanosystems of the Ca' Foscari University of Venice.

Who can apply

Prospective candidates are expected to hold a **Master Degree Biological Sciences, Chemical Sciences or Bio-Engineering** (or equivalent) or equivalent qualification obtained abroad and professional scientific curriculum suitable for carrying out research activities.

Ca' Foscari encourages applications from researchers with positive evaluation in all the criteria in individual proposals such as Marie Skłodowska Curie Actions - Individual Fellowships/ERC Starting Grants/FIRB (Italian Fund for basic research investments)/SIR (Scientific Young Independence Research) or similar. Researchers having successfully completed Marie Skłodowska Curie Actions - Individual Fellowships/ERC Starting Grants/FIRB (Italian Fund for basic research investments)/SIR (Scientific Young Independence Research) or similar funded projects are warmly encouraged to apply.

The following qualifications are considered as evaluation criteria:

a. a PhD graduation;
b. the completion of attendance of a PhD course pending the awarding of the title;
c. specialization diplomas and certificates of attendance of post-graduate specialization courses, obtained both in Italy and abroad, the carrying out of documented research activities at public and private entities with contracts, scholarships or assignments both in Italy and abroad 'abroad;
d.any research experience abroad.

Duration of contract: 22 months, approximately starting: in **February 2024.**

Stipend: The research fellowship amounts to **Euro € 29.135,15** per year gross of the recipient, (corresponding to 53.514,16 Euro gross of the recipient for 22 months), net of the expenses to be sustained by the Provider.

Deadline for submission of applications: 10th January, at 12.00 noon.

How to apply:

Candidates shall submit:

1. The application form;
2. A motivation letter (max 1 page) along with their CV in European format, **with graduation grade**, duly dated and signed, both to enclosed as a one single.pdf file (link); a declaration must be appended in the footnote of the curriculum, pursuant to the Italian DPR 445/2000 and subsequent amendments and additions, that the information provided corresponds to the truth. Moreover the candidates have to consent to the use of their personal data for the purposes of this selection procedure pursuant to the Italian Legislative Decree 196/2003 and to the EU Regulations 2016/679;
3. The attachments called "obligations and understanding" and "participation and compatibility";
4. All documents, qualifications and publications relevant for the selection procedure (please, see the notice - link);
5. A copy of a valid identity document (either Identity Card or Passport);
6. (If available) Evaluation Summary Reports of Marie Skłodowska Curie Actions - Individual Fellowships/ ERC Starting Grants/FIRB (Italian Fund for basic research investments)/SIR (Scientific Young Independence Research) individual proposals having passed all the evaluation thresholds;
7. (If available) Details of Marie Skłodowska Curie Actions - Individual Fellowships, ERC Starting Grants, FIRB (Italian Fund for basic research investments)/ SIR Scientific Young Independence Research funded projects;
8. Declaration on availability to held the interview in remote (Link) to be send via email at the following address: ricerca.dsmn@unive.it

All the schemes of the quoted documentation are available on the website (link).

Incomplete applications will be rejected.

How to submit your application

Applications should be submitted by the online procedure, available on this link:

https://apps.unive.it/domandeconcorso-en/accesso/dsmn-arprintamburini

By inserting their Italian Tax Code.
Foreign citizens not yet in possesion of the Italian Tax Code can use the following link https://apps.unive.it/utils/cf/ to obtain a temporary one and be able to proceed with the request

The candidate, after the uploading, will receive a submission number and an e-mail acknowledging receipt of his/her application.
The candidate if necessary could access the procedures for updating any data and materials by

the link provided by the e-mail, in any case any updates must be made no later than the deadline 10th January 2024, at 12.00 noon.

Please note that the University will be closed from 12/23/2023 to 01/08/2024.

Please note that the University can be contacted for any support needs by the candidate until 24 hours prior to the deadline.
Please note that in case of an high number of applications and / or weight of the materials loaded by the candidates the system might become slower, Therefore it is suggested not to start the process close to the deadline.

NB: the University does not take on responsibility for wrong or late communication of addresses, nor for any communication problem not depending on the University.

Topics of the interview:

- Methods for isolation and characterization of bacterial strains and interaction with viruses;

- Methods for the study of gut microbiota and host interaction;

- Assessment of the knowledge of the foreign English language through the conduct of part of the interview in English;

- Assessment of the Italian language for foreign candidates.

Evaluation

Up to 100 points, specifically:
For qualifications, publications and possible tests, from 0 to 60;
For interview, from 0 to 40.

Selection procedure

The interview will be on 17/01/2024 at 10:00 a.m.

The interview will be held in remote at the link:

meet.google.com/bwj-nrfd-apn

Information and contacts

Candidates may find further details about the application process and the research project in the official call published on the following (link)
For further information please contact the Research Office, email: ricerca.dsmn@unive.it, Ph: 0412348633/8514.

Il Direttore del Dipartimento
di Scienze Molecolari e Nanosistemi
Prof. Maurizio Selva
f.to digitalmente ex art.24 Dlgs 82/2005 (CAD) e ss.mm.ii.

VISTO La responsabile del procedimento
La Segretaria del Dipartimento di Scienze Molecolari e Nanosistemi
Sonia Barizza: barizza@unive.it Telefono: 041-2348535