

COST Action CA18131

Statistical and machine learning techniques in human microbiome studies (ML4Microbiome)

STSM APPLICATION– DETAILED EXPLANATION AND INSTRUCTIONS

COST (www.cost.eu) is the longest-running European framework supporting trans-national cooperation among researchers, engineers and scholars across Europe.

COST Action CA18131 - Statistical and machine learning techniques in human microbiome studies (ML4Microbiome)

Microbiome data are inherently convoluted, noisy and highly variable, and non-standard analytical methodologies are therefore required to unlock its clinical and scientific potential. While a range of statistical modelling and Machine Learning (ML) methods are now available, sub-optimal implementation often leads to errors, over-fitting and misleading results, due to a lack of good analytical practices and ML expertise in the microbiome community. This COST Action will first optimise and then standardise the use of ML techniques, following the creation of publicly available benchmark datasets. Correct usage of these approaches will allow for better identification of predictive and discriminatory 'omics' features, increase study repeatability, and provide mechanistic insights into possible causal or contributing roles of the microbiome.

1) What Short Term Scientific Missions (STSM) are

Short Term Scientific Missions (STSMs) are exchange visits aimed at supporting individual mobility, strengthening existing networks and fostering collaboration between researchers. A STSM should specifically contribute to the scientific objectives of the COST Action, whilst at the same time allowing those partaking in the missions to learn new techniques, gain access to specific data, instruments and / or methods not available in their own institutions / organisations.

STSMs are particularly (but not exclusively) intended for Early Career Investigators (ECIs), i.e. a researcher whose career span less than 8 years between the date of the PhD/doctorate (or similar experience) and the date of involvement in ML4Microbiome. Periods of career leave have to be added to this time span.

2) Eligibility Rules: adherence to the ML4Microbiome scientific objectives

STSMs must contribute to the scientific objectives of one or more ML4Microbiome Working Groups (WG), i.e. WG1 State-of-the-art evaluation and update, WG2 Establishing benchmark datasets and ML DREAM Challenge, WG3 Optimisation and standardisation. In particular:

WG1 State-of-the-art evaluation and update To continuously evaluate the state-of-the-art ML/statistics methods, in terms of their robustness and suitability for microbiome research and how well they address the specific challenges of microbiome data, separately and combined.

WG2 Establishing benchmark datasets and ML DREAM Challenge To establish benchmark datasets and online repositories for all microbiome data types, with which the community can compare, optimise and develop ML methodologies. Furthermore, part of the benchmark data-sets will be used in a ML-Microbiome DREAM Challenge.

WG3 Optimisation and standardisation To optimise and standardize the use of state-of-the-art ML techniques, resulting in best practice SOPs specific to various microbiome data types, human body ecosystems and research questions. The WG3 will also investigate opportunities for automating the established SOPs into pipelines for translational use by clinicians and non-experts.

Full description of WGs and scientific objectives are found in the Memorandum of Understanding (MoU) at https://e-services.cost.eu/files/domain_files/CA/Action_CA18131/mou/CA18131-e.pdf. Applicants are encouraged to read the MoU.

3) Eligibility Rules: Applicants' status

STSM applicants must be engaged in an official research programme as a **PhD Student or postdoctoral fellow or can be employed by, or affiliated to, an Institution or legal entity that has within its remit a clear association with performing research.**

4) STSMs: international mobility rules

The institutions / organisations where applicants pursue their main strand of research are considered as Home institutions. The Host institution is the institution / organisation that will host the successful applicant.

The following table shows the scenarios available to eligible STSM applicants:

Home Institution	Host Institution
From a Participating COST Country	To another Participating COST Country
	To an approved NNC institution
	To an approved IPC institution
From an approved NNC institution	To an approved EC / EU Agency / an approved European RTD Organisation or an approved International Organisation
From an approved European RTD Organisation	To a Participating COST Country

Participating COST Countries

COST Member Countries and/or Cooperating States that have accepted the Action's MoU listed at <https://www.cost.eu/actions/CA18131/#tabs|Name:parties>

The same link can be used to check if any NNC or IPC institution has been approved membership.

NCC Near Neighbour Countries: Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Jordan, Kosovo, Lebanon, Libya, Morocco, the Palestinian Authority, Russia, Syria, Tunisia, and Ukraine

IPC International Partner Countries: Argentina, Australia, Bangladesh, Brazil, Canada, Chile, China, Colombia, Costa Rica, Hong Kong, India, Indonesia, Iraq, Japan, Republic of Korea, Mauritius, Mexico, Namibia, New Zealand, Pakistan, Peru, Saudi Arabia, Singapore, South Africa, Sudan, Thailand, United Arab Emirates, United States of America, Uruguay

European RTD Organisation Any intergovernmental scientific research organisation that is responsible for infrastructures and laboratories whose members are countries, and the majority of which are COST Member Countries or Cooperating State (e.g. EMBL - European Molecular Biology Laboratory, full list in [Vademecum](#)).

5) STSM financial contribution

An STSM grant is a fixed financial contribution that takes into consideration the budget request of the applicant and the outcome of the evaluation of the STSM application. STSM Grants do not necessarily cover all expenses related to undertaking a given mission. A STSM Grant is a contribution to the overall travel, accommodation and meal expenses of the Grantee.

Financial Contribution For All Applicants:

STSMs and financial contribution follow the following criteria:

1. They must have a minimum duration of 5 days.
2. STSM need to be carried out in their entirety within a single Grant Period and always within the Action's lifetime
3. Max contribution per day: 160 €
4. Max contribution for travel expenses: 300 €
5. Max total contribution: 3500 €

The COST Association and the Grant Holder of the Action are not to be considered as being an STSM Grantee's employer. STSM Grantees must make their own arrangements for all provisions related to visas, personal security, health, taxation, social security and pension matters.

The STSM Committee can approve differentiated country rates to cover accommodation and meal expenses based on the perceived cost of living in the host country.

6) STSM Application process

PLEASE NOTE:

ALL STSMs MUST BE PERFORCE COMPLETED BY 15th APRIL 2020

STSMs ARE NOT INTENDED TO COVER EXPENSES FOR THE PARTICIPATION TO CONFERENCES

*All eligible applications will be reviewed, and consequent approval/rejection decisions will be made, **within 10 days from the deadline, please consider this notice period when submitting your application**

Eligible STSM applicants can submit their STSM applications online at: www.cost.eu/STSM. See "HOW TO APPLY" section no. 7 below.

The Action's Management Committee performs the evaluation of each received STSM application.

The selection of successful STSM applicants must consider the scientific scope of the proposed mission and how the mission can support the Action in achieving its scientific objectives. There will be special considerations made by the MC with respect to supporting COST policies on promoting gender balance, enabling Early Career Investigators (ECI) and broadening geographical inclusiveness.

Applicants are strongly encouraged to read relevant documentation at point 8 below.

PLEASE NOTE:

*** STSMs MUST BE APPROVED BY THE STSM COMMITTEE BEFORE THE BEGINNING OF THE TRAVEL**

*** ONCE THE STSM HAS BEEN COMPLETED, THE GRANTEE MUST SUBMIT A SCIENTIFIC REPORT TO THE STSM COMMITTEE AND TO THE HOST INSTITUTION**

Payment of the Grant will be carried out **AFTER** the mission will have been completed **AND IS SUBJECT TO** the scientific report being approved by the STSM Committee and a senior researcher affiliated to the Host institution.

7) HOW TO APPLY:

A) Register to <https://e-services.cost.eu>

B) Go to cost.eu/STSM and provide:

- * Support letter from a senior researcher affiliated to the Home Institution
- * Letter of invitation from a senior researcher affiliated to the Host institution
- * STSM application form
- * Motivation letter including a work plan detailing the proposed activities
- * Applicant's full C.V. (including a list of academic publications – if applicable)

Please note: it is very important to specify in the workplan and in the motivation letter why and how your mission will contribute to the ML4Microbiome objectives, and, in details, which WGs will benefit from your mission

C) Send an email to turukalo@uns.ac.rs providing (same as above):

- * Support letter from a senior researcher affiliated to the Home Institution
- * Letter of invitation from a senior researcher affiliated to the Host institution
- * STSM application form
- * Motivation letter including a work plan detailing the proposed activities (template attached)
- * Applicant's full C.V. (including a list of academic publications – if applicable)

Please note: it is very important to specify in the workplan and in the motivation letter why and how your mission will contribute to the ML4Microbiome objectives, and, in details, which WGs will benefit from your mission

D) Applicants need to receive **before** STSM initiation:

- * MC pre-approval (email from delegated ML4Microbiome person). Please allow at least two weeks from the application submission to the pre-approval

* The formal Grant Notification letter

1. **E)** The following information is needed **after** the STSM has been completed:

* Scientific Report (max five-pages) detailing the activities undertaken: **it is necessary to give full information about why and how your mission has contributed to the ML4Microbiome objectives, and, in particular, which WGs has benefited from your mission, and how**

* An official letter from a senior researcher affiliated to the Host institution formally accepting the scientific report

F) Following the completion of tasks at point E above and the approval of the scientific report by the STSM Committee, applicants will receive:

* MC post-approval (email from delegated ML4Microbiome person) – before STSM payment

* STSM payment

* Applicants of successful STSMs are kindly requested, in case of publication of the results partly coming from the mission work, to acknowledge ML4Microbiome in the following way: “supported by a STSM Grant from EU COST Action 18131 - Statistical and machine learning techniques in human microbiome studies (ML4Microbiome).”

G) Criteria for evaluation and priority include:

- Relevance of STSM with the Action objectives
- Relevance of host institute’s expertise with STSM objectives
- Results of direct interest for/exploitable by the Action
- Applicant is ECI or PhD candidate
- No previous STSM by same applicant
- No other STSMs from same home institution / country

8) For official documents, further details and info please refer to:

- the COST website at www.cost.eu
- the COST Vademecum at <https://www.cost.eu/wp-content/uploads/2019/05/Vademecum-May-2019.pdf>
- the ML4Microbiome project description at <https://www.cost.eu/actions/CA18131/#tabs|Name:overview>
- the ML4Microbiome Memorandum of Understanding at https://e-services.cost.eu/files/domain_files/CA/Action_CA18131/mou/CA18131-e.pdf
- contact turukalo@uns.ac.rs
- contact your local Management Committee member: <https://www.cost.eu/actions/CA18131/#tabs|Name:management-committee>