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国际原子能机构

International Atomic Energy Agency

Agence Internationale de l'énergie atomique

Международное агентство по атомной энергии

Organismo Internacional de Energía Atómica

Vienna International Centre, PO Box 100, 1400 Vienna, Austria

Phone: (+43 1) 2600 • Fax: (+43 1) 26007

Email: Official.Mail@iaea.org • Internet: <https://www.iaea.org>

In reply please refer to: **TN-RER5027-2201830**

Dial directly to extension: (+43 1) 2600-

National Liaison Officers /

National Coordinators

2022-09-29

Subject: Regional Training Course on Next Generation Sequencing (NGS) using Illumina Platform, Maribor, Slovenia, from 21 to 25 November 2022

Dear National Liaison Officer / National Coordinator,

I am pleased to inform you that the International Atomic Energy Agency (IAEA) is organizing the above event under the IAEA technical cooperation project RER5027, “Enhancing Preparedness Capacities of the Veterinary Sector to Confront with Emerging and Re-emerging Diseases of Livestock and Wildlife”.

The purpose of the event is to train the participants in the development of workflows for Whole Genome Sequencing (WGS) process including bioinformatic data processing for characterization of animal and zoonotic pathogens.

The attached Information Sheet provides further details, including technical and administrative aspects of the event. Selection of participants will be in accordance with IAEA procedures. Member States are strongly encouraged to identify women participants.

The IAEA will provide non-local participants with a round-trip air ticket based on the most direct and economical route between the airport nearest the participant's residence and Maribor. Travel details will be agreed with the participants upon receipt of their official nomination. Participants will also receive an allowance from the IAEA sufficient to cover their costs of lodging, daily subsistence and miscellaneous expenses for the duration of the event in line with IAEA rules and procedures.

We would appreciate receiving your country's nominations by **19 October 2022** through the IAEA's InTouch+ platform (<https://Intouchplus.iaea.org>). Should this not be possible, applicants may download the Nomination Form for the course from the [IAEA's webpage](#). Completed forms must be endorsed by the relevant government authority and may be sent to the IAEA, preferably by email to Official Mail - IAEA Mail address Official.Mail@iaea.org, with copy to . Please be advised that late nominations or replacements of participants after the closing date for nominations will not be accepted.

We look forward to receiving your early response.

Yours sincerely,

A handwritten signature in black ink, consisting of several loops and a long horizontal stroke extending to the right.

Programme Management Officer

Enclosure: Information Sheet



Regional Training Course on Next Generation Sequencing (NGS) using Illumina Platform

Hosted by

The Government of Slovenia

through the

ELIXIR Slovenia

Maribor, Slovenia

21 to 25 November 2022

Ref. No.: TN-RER5027-2201830

Information Sheet

Purpose

The purpose of the event is to train the participants in the development of workflows for Whole Genome Sequencing (WGS) process including bioinformatic data processing for characterization of animal and zoonotic pathogens.

Working Language

The working language(s) of the event will be **English**.

Deadline for Nominations

Nominations received after **19 October 2022** will not be considered.

Project Background

Worldwide, the number of outbreaks of emerging and re-emerging animal diseases is increasing. Environmental and climate changes, melioration in conjunction with global movement of animals and wildlife are creating favourable conditions for animal to wildlife interface. Since wild animal species are recognized as potential pathogen reservoirs they can maintain infectious diseases in the environment and interfere with the effectiveness of disease eradication programmes. According to the World Organization of Animal Health (OIE), a number of outbreaks have occurred in Europe in recent years, including: lumpy skin disease (LSD), foot and mouth disease (FMD), highly pathogenic avian influenza (HPAI), bluetongue (BT), peste des petits ruminants (PPR), as well as African (ASF) and classical (CSF) swine fever. Their impact on the economy resulted in great national and regional losses due to: high animal mortality; decrease of animal productivity; costs of control measures; restriction of international trade and deficiency of food of animal origin. Therefore, domestic animal and wildlife surveillance, updating/implementing nuclear derived techniques, such as real time polymerase chain reaction (PCR) and next generation sequencing (NGS) are important tools for the early detection and characterization of transboundary animal diseases (TAD) since a lack of early disease recognition can allow the circulation of pathogens for weeks, resulting in their spread and interspecies transmission. The aim of this project is to enhance the preparedness in animal disease early recognition by:

- (1) establishing/upgrading diagnostic capacities in regard to the different prevailing conditions in participating countries;
- (2) establishing a network to assist designating laboratories in protocol harmonization and early detection of animal diseases and
- (3) developing/upgrading protocols for wildlife infectious disease surveillance.

The project would also enhance communication and collaboration among stakeholders in veterinary and wildlife sectors at both the national and regional level by joint workshops, trainings and conferences.

Scope and Nature

The IAEA promotes wider dissemination / application of the WGS technologies in counterparts' laboratories through the on-site regional training including establishment of functional WGS workflows in local laboratories or through a sequencing service provider for possible wider coverage to as many laboratories as possible.

The invited experts will give presentations and conduct hands on exercises for following topics of the WGS workflow:

- i) Sample preparation and inactivation:
 - a) host nucleic acids (NA) removal;
 - b) extraction of NAs;
 - c) biological safety of extracted NAs for international;
 - d) use / benefit of specific procedures (RNA based capture, SISPA etc.);
 - e) PCR amplification-based procedures for specific pathogen (primers used for Influenza A virus).

- ii) Library preparation.
- iii) Illumina platform setup and run.
- iv) Suggestions on bioinformatic workflows (Linux based approach and Galaxy platform approach) for Illumina platform based WGS:
 - a) Sequence quality control and quality trimming;
 - b) host reads removal;
 - c) de novo assembly;
 - d) Reference guided assembly;
 - e) Variant calling;
 - f) post assembly sequence analysis (annotation, comparative analysis, and phylogeny); g) Sequence sharing (GenBank submission and raw data submission).

Expected Outputs:

The expected outputs of the training course are:

- Practical recommendations for the individual phases of the WGS workflows mentioned above provided.
- General introduction on the existing WGS platforms and bioinformatic data processing presented and discussed.
- Options for WGS workflows for Illumina platform provided.
- the appropriate bioinformatic pipelines for analysing AIV and NDV raw data (Linux based and Galaxy platform based) established.
- Possibility for introduction of advanced workflows (technical and bioinformatic requirements) presented and discussed.

Participation

The regional training course is open to 20 participants from Member States participating in the TC project RER5027.

Each Member State is invited to nominate up to two candidates who must match the profile described in the corresponding paragraph. By nominating two candidates, countries are requested to indicate which candidate should have priority.

Participants' Qualifications and Experience

The regional training course is open for the staff members of the counterpart laboratories from Member States. The staff-members responsible for laboratory diagnosis of viral and bacterial animal diseases using molecular methods including Sanger and WGS sequencing are given a preference to participate in this training course.

Application Procedure

Candidates wishing to apply for this event should follow the steps below:

1. Access the InTouch+ home page (<https://intouchplus.iaea.org>) using the candidate's existing Nucleus username and password. If the candidate is not a registered Nucleus user, she/he must create a Nucleus account (<https://websso.iaea.org/IM/UserRegistrationPage.aspx>) before proceeding with the event application process below.
2. On the InTouch + platform, the candidate must:
 - a. Finalize or update her/his personal details, provide sufficient information to establish the required qualifications regarding education, language skills and work experience ('Profile' tab) and upload relevant supporting documents;
 - b. Search for the relevant technical cooperation event (EVT2201830) under the 'My Eligible Events' tab, answer the mandatory questions and lastly submit the application to the required authority.

NOTE: Completed applications need to be approved by the relevant national authority, i.e. the National Liaison Office, and submitted to the IAEA through the established official channels by the provided designation deadline.

For additional support on how to apply for an event, please refer to the [InTouch+ Help page](#). Any issues or queries related to InTouch+ can be addressed to InTouchPlus.Contact-Point@iaea.org.

Should online application submission not be possible, candidates may download the nomination form for the training course from the [IAEA website](#).

NOTE: A medical certificate signed by a registered medical practitioner dated not more than four months prior to starting date of the event must be submitted by candidates when applying for a) events with a duration exceeding one month, and/or b) all candidates over the age of 65 regardless of the event duration.

Administrative and Financial Arrangements

Nominating authorities will be informed in due course of the names of the candidates who have been selected, and will at that time be informed of the procedure to be followed with regard to administrative and financial matters.

Selected participants will receive an allowance from the IAEA sufficient to cover their costs of lodging, daily subsistence and miscellaneous expenses. They will also receive either a round-trip air ticket based on the most direct and economical route between the airport nearest their residence and the airport nearest the duty station through the IAEA's travel agency American Express, or a travel grant, or they

will be reimbursed travel by car/bus/train in accordance with IAEA rules for non-staff travel.

Disclaimer of Liability

The organizers of the event do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in approving his/her participation, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

Note for female participants

Any woman engaged by the IAEA for work or training should notify the IAEA on becoming aware that she is pregnant.

The Board of Governors of the IAEA approved new International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. The Standards deal specifically with the occupational exposure conditions of female workers by requiring, inter alia, that a female worker should, on becoming aware that she is pregnant, notify her employer in order that her working conditions may be modified, if necessary. This notification shall not be considered a reason to exclude her from work; however, her working conditions, with respect to occupational exposure shall be adapted with a view to ensuring that her embryo or foetus be afforded the same broad level of protection as required for members of the public.

IAEA Contacts

Programme Management Officer (responsible for substantive matters):

Ms Carmina Elizabeth Jimenez Velasco
Division for Europe
Department of Technical Cooperation
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA
Tel.: +43 1 2600 22340
Fax: +43 1 26007
Email: C.Jimenez@iaea.org

Administrative Contact (responsible for administrative matters):

Ms Ia Beria
Division for Europe
Department of Technical Cooperation
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA
Tel.: +43 1 2600 26099
Fax: +43 1 26007
Email: I.Beria@iaea.org