SOP for Joining INSACOG Network

The Indian SARS-CoV-2 Genomic Consortia (INSACOG) established for genomic surveillance in the country was setup in Jan 2021 with initial participation of 10 National research laboratories belonging to the Department of Biotechnology, Indian Council of Medical Research, Council of Scientific and Industrial Research and Ministry of Health and Family Welfare, Govt. of India. At a later stage 33 more research laboratories have been included in the network for enhancing sequencing effort in the country. These 43 laboratories operate on **a hub and spoke model** where the 10 IGSLs (INSACOG Genome Sequencing Laboratories) provide handholding for the new laboratories and act as hubs. Subsequently some more sequencing laboratories were included as a part of the sequencing network. There is a felt need for increasing sequencing efforts further for identification of variants of concern (VoC) and variants of Interest (VoI) in the Indian samples so as to advice the policy makers for effective management of COVID-19.

Based on several rounds of discussion in the INSACOG-SCAG it was felt necessary to clearly define roles and responsibility of the sequencing laboratories involved in genomic surveillance efforts. This was essential as the identified/ involved sequencing laboratories have varied levels of infrastructure, sequencing platforms, bioinformatics pipelines and human resources for carrying out sequencing in a timely manner.

The SCAG, based on several rounds of discussion recommends placing the Genome Sequencing Laboratories in three groups:

A. Group1: INSACOG Genome Sequencing Laboratories (Hub Laboratories):

- Since the inception of sequencing surveillance program as well as INSACOG network, 10 National Research Laboratories of the Department of Biotechnology (5 laboratories), Council of Scientific and Industrial Research (2 laboratories), ICMR (1 Laboratory), MoH&FW (2 Laboratories) were identified as INSACOG Genome Sequencing Laboratories (IGSLs).
- These laboratories have significant experience and expertise in sequencing SARS-COV-2 genomes, have adequate and appropriate sequencing platforms, expertise in bioinformatic analysis and interpretations.
- These laboratories receive samples from sentinel sites designated by NCDC and those operating through state surveillance network. Subsequently, as some of these laboratories are also testing facilities, sequencing of retrospective samples was also carried out.
- These laboratories, therefore constitute the hub of the INSACOG network, and are provided with login credentials for submitting analysed sequencing data on the IHIP-Integrated Health Information Platform portal developed and managed by NCDC. The IGSLs are also required to submit the FASTA & FASTAQ files of the analysed sequences to centralised repositories of the two of the IGSLs (NIBMG, Kalyani and IGIB, New Delhi).
- These laboratories have also developed facilities for storage and retrieval of samples, as and when needed. The financial support for carrying out sequencing surveillance are met from the support received from the respective agencies through EMR project or through institutional support.

B. Group 2: Laboratories nominated by Central Govt. Ministries/ Department as well as State Government nominated Laboratories:

- With the surge in COVID-19 positivity rate, it was felt necessary to include some more laboratories in the genome surveillance projects.
- INSACOG network was then expanded to include 33 more sequencing laboratories belonging to Central Govt/ State Govt./ Not for Profit Organisation.
- These laboratories were identified based on the availability of sequencing platforms, previous engagement with COVID -19 activities/ sequencing of COVID-19 samples, competence in bioinformatic analysis.
- These laboratories were assigned to one of the HUB laboratories for mentoring and hand holding. The analysed sequence information from these laboratories is generally shared with the HUB laboratories, which in turn, submit the sequence information to IHIP portal as well as the IGIB and NIBMG hub.
- In a few cases, taking into account the number of sequences of required quality generated, some of these laboratories were provided direct IHIP access, based on the recommendation of the HUB labs.
- The expenses for carrying out sequencing work for these laboratories are met from the respective agencies/ departments/ state governments.

Guidelines and procedure for the involvement of State Govt. nominated laboratories will be as follows:

- The interested State Government Nominated Laboratories will be required to provide the following information to INSACOG (as per the specific format enclosed).
- Once this information is received, the technical committee constituted by the INSACOG-SCAG will undertake assessment by interacting with the concerned laboratory. The technical committee will also interact and assign a hub laboratory (IGSL) for the nominated laboratory.
- The INSACOG SCAG, based on the assessment report will recommend to DBT the selected sequencing laboratories as well as the IGSLs to which they will be attached.
- The laboratories should be able to sequence at least 50 samples per week.
- In case the laboratories don't have necessary infrastructure, they can resubmit Expression of Interest to the INSACOG as and when their facilities are in place.
- The state government laboratories may obtain the samples from the sentinel sites of the respective states for which NCDC could provide user IDs and Password for accessing the sample details, on recommendation of the hub IGSLs.
- In case the state government laboratories don't have BSL-2 facilities then respective hub IGSLs can provide isolated RNA for sequencing.
- These laboratories should provide the sequence information to the IGSLs for sequence analysis and further submission to the national portal. This is essential to avoid any misinterpretation of the data generated. But this could be revisited if IGSLs to which the state government laboratories are associated feels that uploading of the data can independently be done by the respective laboratories.

C. Group 3: Laboratories belonging to Private Sector Commercial Labs and other entities:

- In order to enhance the scale of sequencing and for a sustainable effort, the inclusion of interested private-sector laboratories and companies is being considered.
- Due consideration of all important issues including Ethical, Economical, Data quality and security IPR etc. (as mentioned in the guidelines) should be taken into consideration by the INSACOG SCAG while deciding on inclusion of private sector laboratories for sequencing efforts. Sequencing result should not be disclosed in public or media or to any third party.
- These laboratories should be required to be aligned with one of the HUB laboratories for IHP entries, quality assurance and data interpretation.
- These laboratories will be required to clearly indicate source of funding for undertaking sequencing activities.
- These laboratories should specify the turnaround time of sequencing depending on minimum and maximum number of samples they could sequence.

Guidelines and procedure for the involvement of private sector laboratories and companies will be as follows:

- Private sector laboratories to provide an expression of interest to sequence samples routed through an INSACOG IGSL to INSACOG secretariat (in the mail ID: manager.insacog@nibmg.ac.in). Sequencing costs to be met by the private laboratory. Also charges shall not be levied from the patients. Private lab has to also ensure that financial resources to be used for the purpose are in compliance of Govt. of India norms and all due processes and clearances etc. are obtained in advance.
- Samples will be routed and reported via an IGSL (hub laboratory) of INSACOG.
- Private laboratories will agree to be assessed for sequencing capacities and infrastructure. The technical committee constituted by the ISACOG-SCAG will undertake assessment by interacting with the concerned laboratory.
- Based on the information provided, the INSACOG -SCAG will recommend to DBT for the inclusion or otherwise, of the private laboratory as a sequencing laboratory.
- The details of the accredited private laboratories will be communicated to the all the INSACOG- IGSLs and also posted on the DBT INSACOG Portal.
- For data privacy and protection, labs have to adhere to Biotech - PRIDE (Biotech - Promotion of Research and Innovation through Data Exchange) guidelines. Overall, data protection as per Govt policy must be ensured in the whole process.
- Sequencing SOPs and reporting to the IGSL will follow the norms for the INSACOG network.
- IGSLs will provide isolated RNA to the private laboratories for construction of c-DNA libraries and sequencing. These samples will be coded and no information on SRF IDs and other details will be provided.
- Private laboratories will provide sequence information as FASTQ and Consensus FASTA files to the IGSLs for submission to the national portal.
- Sequencing information will be confidential and not shared with any third party, media or the public.
- The private laboratories will preserve the RNA samples for a specific period to be decided by IGSLs in consultation with INSACOG-SCAG.
- The HUB IGSLs to which the laboratories are assigned will perform a monthly QC

check of sequencing, by re-sequencing of a subset of the RNA sequenced at the private laboratory.

- Association with INSACOG shall not be used for advertising purposes in any manner.
- INSACOG reserves the right to withdraw recognition of the lab at any point of time.

FORMAT FOR APPLICATION

Expression of Interest by State Govt./ Central Govt. nominated laboratories and Not for Profit NGOs for Joining the INSACOG Network

1. Name and Complete Address of the Laboratory
2. Details of the Lab. In charge with Telephone No. and Email Id
3. IGSL partner laboratory/ies _ Letter[s] of support to be included.
4. Available sequencing platform with model no./ year of procurement and capacity .
5. Weekly and monthly capacity of sequencing viral genomes
6. Trained laboratory personnel available for sequencing and bioinformatics analysis
7. Access controlled freezers for storage of RNA
8. Approximate turnaround time (**TAT**) for reporting sequencing information.
9. Ability to provide both FASTQ and consensus FASTA files for each sample sequenced.
10. Previous experience of whole genome sequencing service.
11. If isolating RNA (based on the point in the previous page?) IBSC approval of the BSL2+ capability in the laboratory

Signature

Name Date

FORMAT FOR APPLICATION

For laboratory belonging to Private Sector

EXPRESSION OF INTEREST (on company letterhead) for Joining the INSACOG Network

1. Name and Complete Address of the Laboratory
2. Details of the Lab. In charge with Telephone No. and Email Id
3. IGSL partner laboratory/ies _ Letter[s] of support to be included.
4. Available sequencing platform with model no./ year of procurement and capacity.
5. Weekly and monthly capacity of sequencing viral genomes
6. Weekly/monthly commitment to sequence for INSACOG
7. Trained laboratory personnel available for sequencing and bioinformatics analysis
8. Access controlled freezers for storage of RNA
9. Approximate turnaround time (**TAT**) for reporting sequencing information.
10. Ability to provide both FASTQ and consensus FASTA files for each sample sequenced.
11. Previous experience of whole genome sequencing service.
12. Source of financial resources.

Signature Date