General information about usage of

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This "General Information" document is part of the SOPHiA DDM™ Operation Manual. The "Operation Manual" and "Product Information" (CE-IVD products) are provided separately.
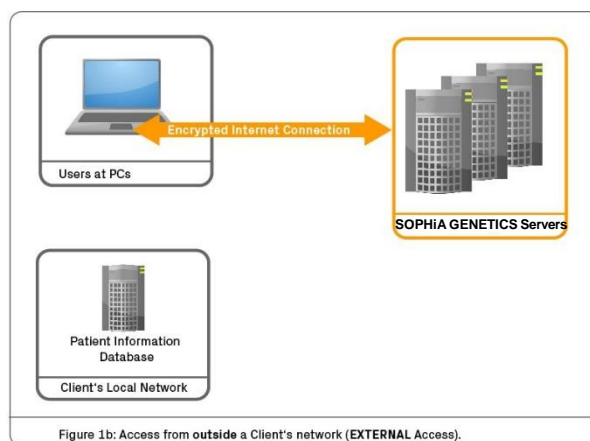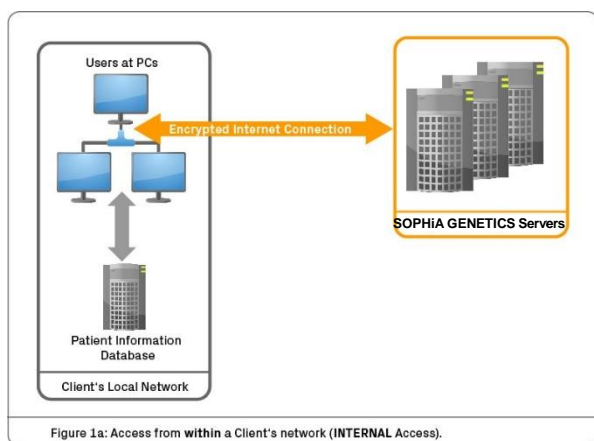
Disclaimer

The term "Patient" only applies if used in scope of CE-IVD. For RUO products, this term should be considered as "Genomic profile".

1. Technical information about the product & the SOPHiA DDM™ platform

The use of the *Product* is made through the SOPHiA DDM™ platform. SOPHiA DDM™ is provided in a Software-as-a-Service mode. In a single integrated workflow, SOPHiA DDM™ lets users of an Institution launch a request to automatically perform the bioinformatics analysis, quality assurance, result visualization and data storage of the raw data of a full NGS run. Following a user request, the raw NGS data is transmitted to SOPHiA GENETICS' hosted IT infrastructure where it is processed and stored. Once processing is completed all results are available to users for visualization in SOPHiA DDM™.

Only encrypted data is transmitted over the network to the hosted IT infrastructure. In no event will any data transmitted over the network contain any patient-identifying data to avoid the possibility of identifying the patient. Patient-identifying data is data that identifies a patient including, but not limited to, an individual´s social security number or other government-issued identification number, date of birth, address, telephone number, biometric data or name. In the event the Institution wants to use the solution to store Patient-identifying Data, this subset of Confidential Information can be stored at a local database residing outside of reach of SOPHiA GENETICS (e. g. in the Client's own Local Area Network (LAN) or hosted LAN).

Figure 1a: Access from **within** a Client's network (**INTERNAL** Access).

Figure 1b: Access from **outside** a Client's network (**EXTERNAL** Access).

1.1 User Authentication and Access Control

Each Institution provides a list of individual users of the system, along with email addresses that will be used as username. Each user will also receive an initial password and a token card. The password shall be updated upon first login onto the system.

To log in, the user must enter his/her username and password and will be prompted for a specific security code to be read from the token card.

Upon 5 failed attempts, the user login will be blocked, and the administrator must send an official request to SOPHiA GENETICS to re-activate the login. If you have forgotten your password or lost your token card, please contact a representative of SOPHiA GENETICS for a replacement.

1.2 Operation in Internal and External Access

Use of the solution only requires the local installation of a thin client that enables the use of the SOPHiA DDM™ platform.

Normal use of the SOPHiA DDM™ platform is from within the Institution's local network; this environment is defined as "INTERNAL Access". To allow the review of genetic analysis results from outside of an Institution's network or by an independent expert, the SOPHiA DDM™ platform can also be used from outside of an Institution's network; his environment is defined as "EXTERNAL Access". See Figure 1 for an illustration of INTERNAL and EXTERNAL access.

Note that some functions of the SOPHiA DDM™ platform are only available from an INTERNAL Access environment. Table 1 provides a description of the services that are available in each access environment.

Function of the SOPHiA DDM™ platform	Availability in Access environment (see Figure 1)	
	INTERNAL	EXTERNAL
Creation of Patient* Records	☑	✗
Upload of raw NGS Data	☑	✗
Download of raw and intermediary NGS Data	☑	✗
Download of Analysis Results	☑	☑
Display of Patient* Name and Institution-assigned Patient* Identifier next to analysis results, if entered by institute	☑	✗

Table 1: SOPHiA DDM™ functions available during INTERNAL and EXTERNAL access

1.3 Description and storage of Patient* and Analysis-related information entered by the user

Patient*- and Request-information entered by Users is stored either in the Client Local Database or transmitted to remote servers of SOPHiA GENETICS for analysis and storage. The following table summarizes what information is stored on which location.

Information Field(s) and Description	Entry required by SOPHiA DDM™ software	Site of Information Storage	
		Client local database	SOPHiA GENETICS
Patient* First and Last Name	✗	☑	✗
Patient* Birth Date	☑	☑	Birth Year
Patient* weight and height	✗	☑	☑
Medical History of the Patient*, of his/her Mother, of his/her father.	✗	☑	☑
Origin of Father and Mother of the patient*	✗	☑	☑
All analysis results generated by the SOPHiA DDM™	n/a	☑	☑

Table 2: Information and storage location

2. Requirements

2.1 IT requirements

Use of the Service only requires the local installation of a thin client that enables the use of the SOPHiA DDM™ platform. The user shall install the thin client on its PC/laptop by downloading it from a secure Internet link provided by SOPHiA GENETICS. The installation may require administration rights. The thin client runs under Windows XP, Windows 7, and Mac OS X. We recommend a minimum of 1 GB RAM available so that Integrative Genomics Viewer (IGV) will run properly. The thin client has no database.

In the event an Institution wants to use the Service to store "patient-identifying data", on special request by the Institution, this subset of Confidential Information can be stored at a local database residing outside of reach of SOPHiA GENETICS (Institutions' own Local Area Network (LAN) or hosted LAN).

2.2 Data requirements

Illumina MiSeq®/NextSeq® platforms:
Data files must be gzipped fastq paired-end and the files must be named to match the regular expression:
/^(.*?)_([a-zA-Z0-9-]+)_([a-zA-Z0-9-]+)_([a-zA-Z0-9-]+)_([a-zA-Z0-9-]+)./

Ion PGM™/Proton™ systems:
Data files must be basecaller bam or gzipped fastq files and the files must be named to match the regular expression:
/^.*IonXpress_[0-9]{3}.*/
Both demultiplexed (split by patient*) and non-demultiplexed files are accepted.

Roche 454 platforms:
Data files must be sff files, fastq files or fna+qual file pairs. In the case of fna+qual the two files must be named identically except for the file extension.
Both demultiplexed (split by patient*) and non-demultiplexed files are accepted.

3. Warning and safety precautions

- For Research Use Only
- Use of raw data other than those specifically nominated may result in inaccurate test results.
- Results must be interpreted by a qualified expert (for instance in Switzerland, **"spécialiste** FAMH **en médicine de laboratoire, génétique médicale").**
- Third party licences for the analysis of gene mutations detected by this product may be required and are the responsibility of the user.
- Variants identified by this product vary in frequency among different populations. It is not possible to validate all combinations of variants that could be detected by this product. It is recommended to confirm novel and rare variants by the user using a validated reference method.
- The original raw NGS data files uploaded with the SOPHiA DDM™ platform, inclusive of their file names, are transmitted to SOPHiA GENETICS and may be stored indefinitely. Users shall therefore be careful NOT to include any patient* identifying information in these files. For instance, do not include a patient* name or birth date in a NGS file.
- The local database storing "patient-identifying data" installed in the Institutions' own Local Area Network (LAN) or hosted LAN is supplied by SOPHiA GENETICS. However, the Institution is responsible for ensuring the operation of the database, and for conducting regular back- ups of data stored on that database. If this is not done, patient*-identifying information will be lost, and the identification of patient*s associated with analysis results produced by SOPHiA DDM™ may be difficult or impossible.
- To comply with data privacy and protection laws the client Institution is responsible to ensure that their patient* has provided consent for their genetic analysis.

4. Frequently Asked Questions

How does SOPHiA GENETICS ensure the privacy of the patient and genetic information uploaded to its servers?

All files are encrypted in the client computer during the upload and remain encrypted while they are stored at SOPHiA GENETICS. A checksum of each file is calculated prior to encryption, and this is used to ensure that the file is not corrupted during upload. The upload takes place over a secure web connection.
All files generated during the analysis are encrypted prior to storage and decrypted only when delivering to the end user.

How does SOPHiA GENETICS ensure the preservation of genetic data uploaded to its servers?

To ensure availability and preservation of the data, files in Active storage are replicated across two data centers and copied to Archive storage, files are held at one data center with a second copy backed up at a remote data center. A third copy is held on an independent file system within one of the datacenters.

5. Troubleshooting

This section provides solutions for common problems that may be encountered by users of SOPHiA DDM™ and discusses how they can be resolved.

I am unable to access the SOPHiA DDM™ software page (login page does not appear)

Ensure you have an active internet connection. If you do and the problem persists, please contact SOPHiA GENETICS.

I am unable to log into the SOPHiA DDM™ service (login is rejected). What do I do?

Ensure you have correctly entered the username, password and token. Ensure the token card is still active and in date. Contact SOPHiA GENETICS if the problem persists.

I have created an analysis request, but results are not available. What do I do?

If the status is shown as 'Error Uploading' and there is a 'Resume' button, please use it to resume the upload.
If the status is 'Error Analysis' or anything else, please contact SOPHiA GENETICS.

6. Support and contact details

In case of difficulty with using SOPHiA DDM™, please consult the troubleshooting section above, or contact our support line and email: +41 21 561 34 75; support@sophiagenetics.com

The SOPHiA DDM™ platform and service is designed and operated by SOPHiA GENETICS SA:

SOPHiA GENETICS SA
CH-1180 Rolle, Switzerland
www.sophiagenetics.com

Document Approvals
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Approval Verdict: Approve	Erwann Vieu, (evieu@sophiagenetics.com) Technical Approval 23-May-2023 07:59:50 GMT+0000

QA Approval Verdict: Approve	Brian Acon, (bacon@sophiagenetics.com) Quality Assurance Approval 23-May-2023 08:33:17 GMT+0000