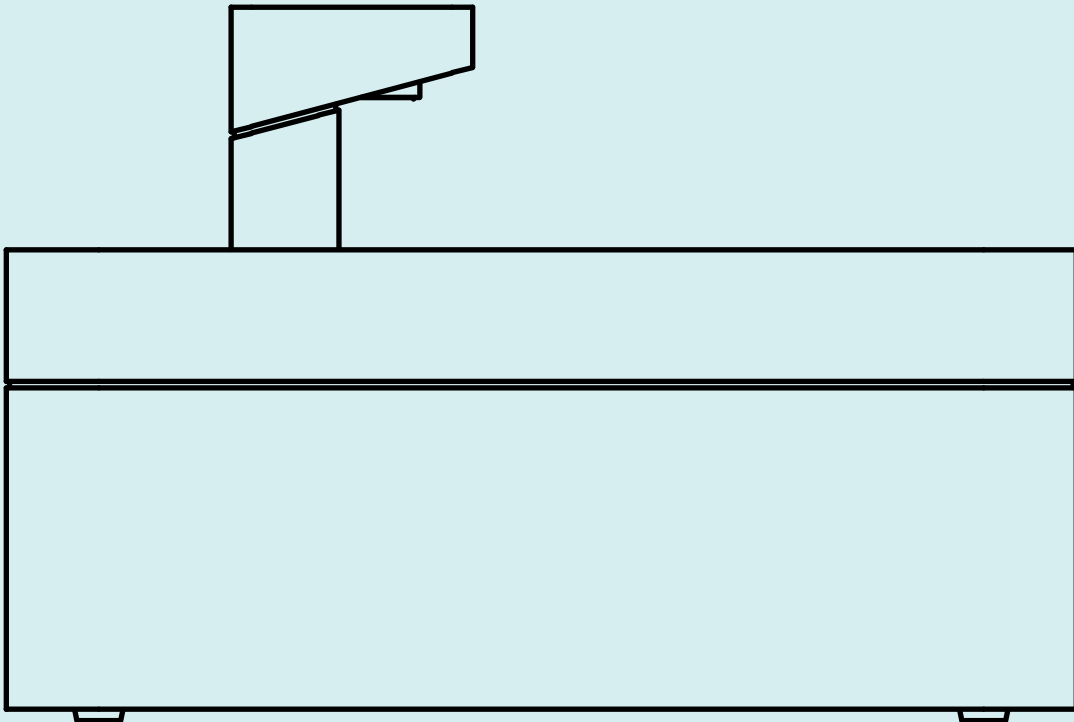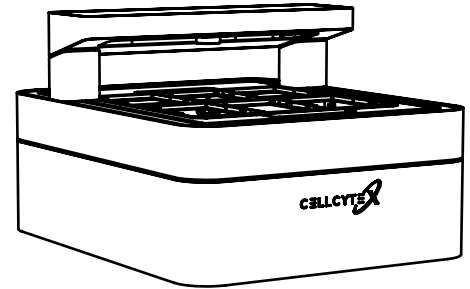# CELLCYTE X™

Quick Start Guide

Welcome to the world of live-cell imaging

Details are vital in live-cell imaging. That is why we have designed the CELLCYTE X™ to give scientists maximum insight into every experiment. Our goal is to remove the obstacles and variables in live-cell imaging so researchers can focus on the results. The most cost-efficient and high-throughput live-cell imaging system on the market is ready to address cell culture needs and empower research.

Live-cell imaging is a powerful tool for ensuring successful cell monitoring, but most systems are large, costly, and hard to use. The CELLCYTE X combines compact size with reliable power to deliver fast, sharp live-cell imaging from an incubator. Keep cells stationary without ever missing a relevant interaction or response. Tap into a study's full potential with automatic data acquisition and analysis.

This Quick Start Guide will help new users get started with the CELLCYTE X. Please review the entire document before using the product for the first time.

Welcome to the future of cell monitoring!

Content

2. Safety Information

Review the complete document before using the CELLCYTE X™. Mishandling can lead to equipment damage and severe injury. The following symbols are used to indicate the risk of equipment damage or personal injury:

This symbol indicates the risk of personal injury or damage to the product or equipment.

This symbol indicates the presence of UV light. Wear proper safety attire while operating the CELLCYTE X microscope.

Manufacturer

CYTENA GmbH
Zollhallenstr. 5
79106 Freiburg
Germany

2.1 General Safety Information

If the CELLCYTE X acts in a way that is not described by this document, turn it off and contact CELLINK.

Use the CELLCYTE X for its intended purposes only. Do not modify its instruments, sub-components or accessories. Do not open the CELLCYTE X, disassemble it, or otherwise use in ways not described in this manual.

Never place your fingers near the machine until all parts have stopped moving. Moving parts can cause serious injury.

Never clean or service the CELLCYTE X while the machine is operating. Always turn off the power and disconnect any external sources of power before cleaning or servicing the CELLCYTE X.

The CELLCYTE X uses UV light to illuminate samples. Never look directly at the UV light! Never expose skin to the UV light! Eye or skin exposure can result in serious personal injury.

Always ensure that equipment is correctly mounted before operating. Improperly mounted vessel trays, objective lenses, accessories, and cables can be dangerous. If any equipment appears damaged, turn off the machine, unplug all external connections, and contact CELLINK before further use.

Never tamper with the optics or electronics of the CELLCYTE X. Tampering risks equipment damage and personal injury.

CELLCYTE X is designed to operate inside a controlled incubator. Operating the instrument outside its indented environment may cause harm. Harmful conditions include, but are not limited to, liquids getting into the system or hostile environments such as X-rays or hard UV. Please contact CELLINK for additional inquiries.

2.2 Unpacking, Lifting and Carrying

Read how to safely unpack and set up the CELLCYTE X in Chapter 3.

The CELLCYTE X is a heavy instrument. Always use a minimum of two people to unpack and move the machine.

2.3 Electrical Information

Always connect the CELLCYTE X to a grounded socket and use the voltage described in the specifications. Improper electrical handling can cause equipment damage and personal injury.

2.4 Protective Equipment

Always wear gloves and proper personal protective equipment (PPE) during CELLCYTE X operation.

Always wear appropriate PPE while handling hazardous materials including materials that are toxic, corrosive, or carcinogenic.

Read the material safety data sheets, packing labels, and the manufacturer's or distributor's catalogue before using the CELLCYTE X.

2.5 Hazardous Materials

Consult material safety data sheets, packaging labels, and the manufacturer's or distributor's catalogue before handling hazardous materials such as flammable and corrosive materials. Ensure any users are informed of the material's characteristics and compatibility with the CELLCYTE X. Always use appropriate safety equipment and attire. If you are unsure of a material's compatibility, contact CELLINK.

Use ethanol to disinfect the CELLCYTE X, taking care not to leave liquid on the linear guides. After using ethanol, wait at least 60 seconds for the liquid to evaporate to ensure that all flammable vapors have dissipated. The CELLCYTE X can then be placed inside the incubator for operation. For inquiries about other disinfectants, please contact CELLINK.
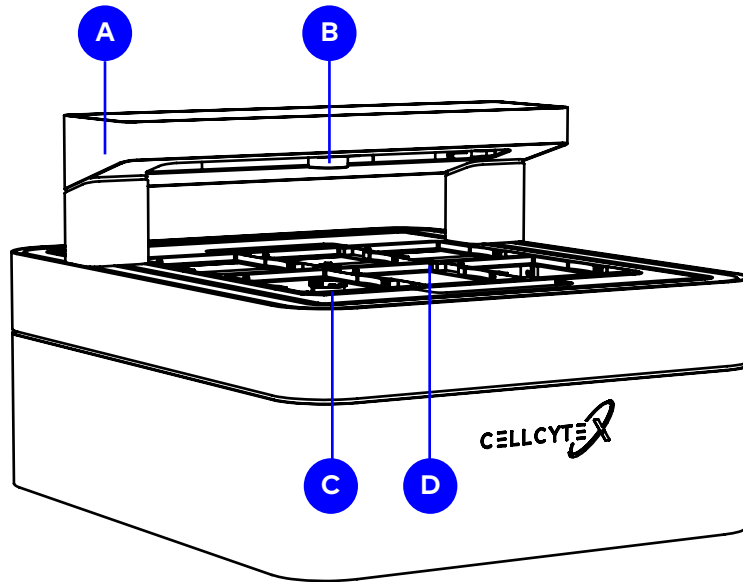
3. Specifications

3.1 Product

Figure 1 Product map: CELLCYTE X main unit.

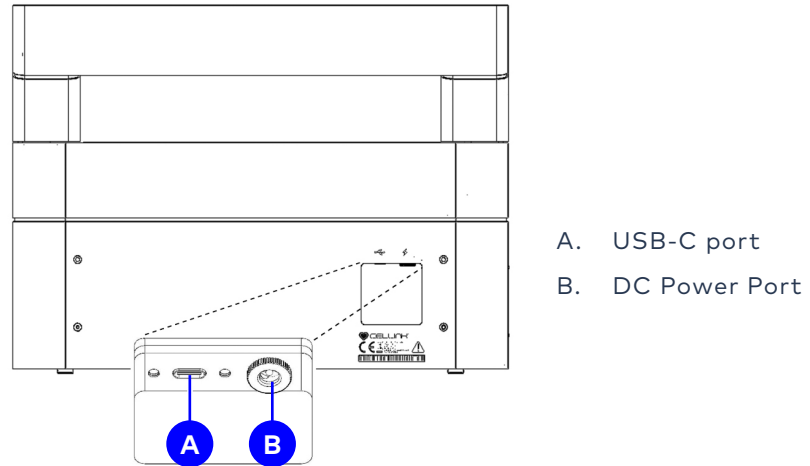A. CELLCYTE X Main Unit

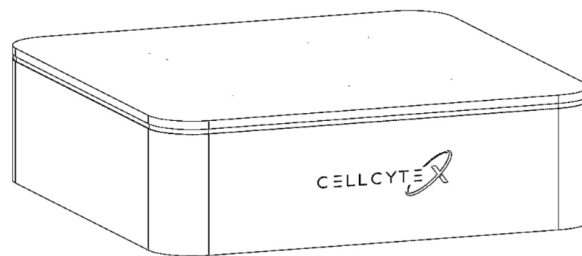B. Transmission Unit

C. Objective Lens
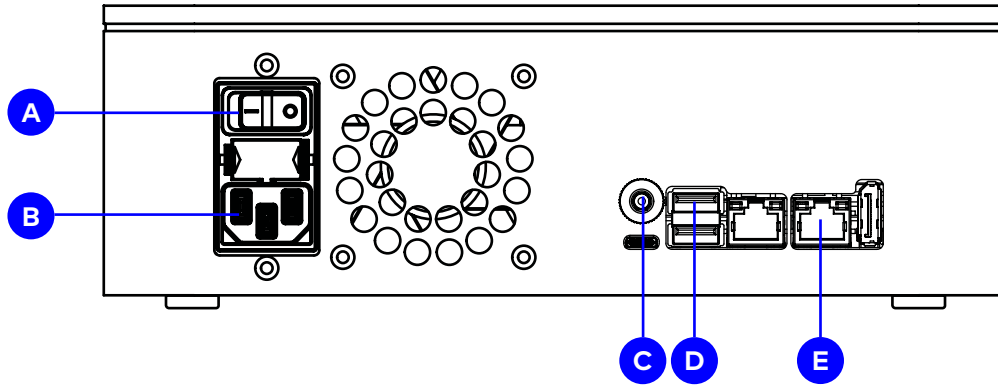
D. Vessel Tray

A. USB-C port

B. DC Power Port

Figure 2 CELLCYTE X main unit power port and USB-C port.

Figure 3 CELLCYTE X computer unit.

Figure 4 CELLCYTE X computer unit ports and power switch.

A.   Power Switch

B.   Power Port

C.   DC Power Port

D.   Computer USB ports 1 and 2

E.   Ethernet Output

Serial number

CELLCYTE X COMPUTER UNIT C1
S/N: C-XXXXXXX
100-240 VAC, 50-60 Hz, 70 W
Fuse: T1.25Q 250V
CELLINK AB (www.cellink.com)
Made in Sweden
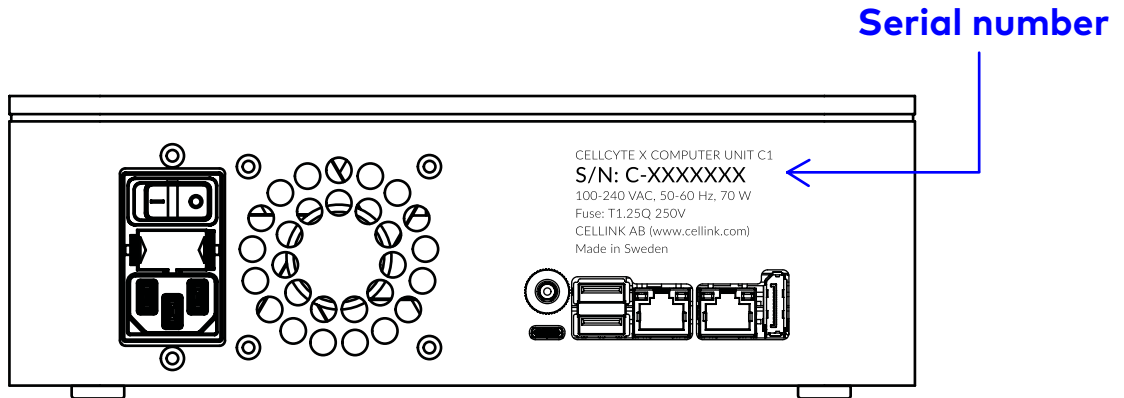
Figure 5 CELLCYTE X serial number on the backside of the computer unit. The MAC addresses can be found on a sticker at the bottom of the CELLCYTE X computer box.

3.2 Technical Specifications

Power input: 100–240 VAC, 50–60 Hz, 70 W

Fuse: 250 VAC, 1.25 A

3.3 CELLCYTE X Main Unit

Height: 334 mm

Width: 406 mm

Depth: 496 mm

Operate the CELLCYTE X microscope unit inside an incubator at a temperature between 20-40 degrees Celsius.

3.4 CELLCYTE X Computer Unit

Height: 90 mm

Width: 250 mm

Depth: 250 mm

Operate the CELLCYTE X computer unit indoors in a standard laboratory at ambient room temperature.

4. Hardware Setup

4.1 Contents of the Box

- 1x CELLCYTE X Main Unit
- 1x CELLCYTE X Computer Unit
- 1x 10X Microscope Objective
- 1x Power Cord
- 1x USB-C Data Cable
- 1x DC Power Cable
- 1x Ethernet Cable
- 1x USB stick containing software installation files and user manual

4.2 Unpacking the CELLCYTE X

Follow these steps to unpack the CELLCYTE X:

⚠️ Do not attempt to unpack the CELLCYTE X without reviewing the procedure below. Doing so risks personal injury and equipment damage.

⚠️ Do not attempt to unpack the CELLCYTE X without reviewing the procedure below. Doing so risks personal injury and equipment damage.
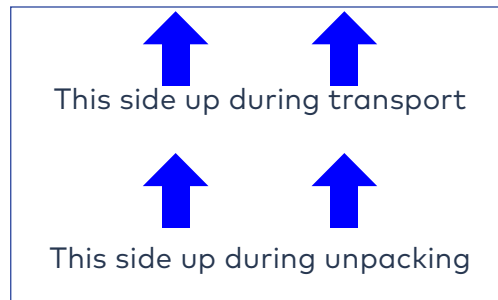
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1 Clear a stable table and floor space of at least 2 by 3 meters.

2 Place the box on its bottom according to the arrows on the side of the box.

This side up during transport

This side up during unpacking

Figure 6 Place the box upwards according to the arrows

3 Carefully remove the tape on the top of the box.

4 Use the packaging handles to remove the contents of the box, and then place the contents on a soft, smooth surface.

5 Remove the top piece of the packaging. Hold the bottom edge to lift the CELLCYTE X out of the bottom packaging. Place the CELLCYTE X on a table.

6   Remove any remaining packaging material from the CELLCYTE X.

7   Remove the remaining contents of the box and check that you have received all equipment listed in the **4.1 Contents of the box**.

8   Either store or recycle the shipping materials.

4.3 Manually Cleaning or Sterilizing the CELLCYTE X

The CELLCYTE X has a chemical-resistant coating. Clean or sterilize it with ethanol. Before using ethanol, turn off and unplug the CELLCYTE X. Spray the surface and wipe it down with a soft cloth.

⚠️   Be careful not to spray the exposed linear guides with ethanol. This could affect performance overtime.

⚠️   After using ethanol, wait at least 60 seconds before starting the CELLCYTE X. Ethanol is flammable, and taking this precaution ensures that all remaining ethanol vapors have dissipated. Failure to wait can cause equipment damage and personal injury.
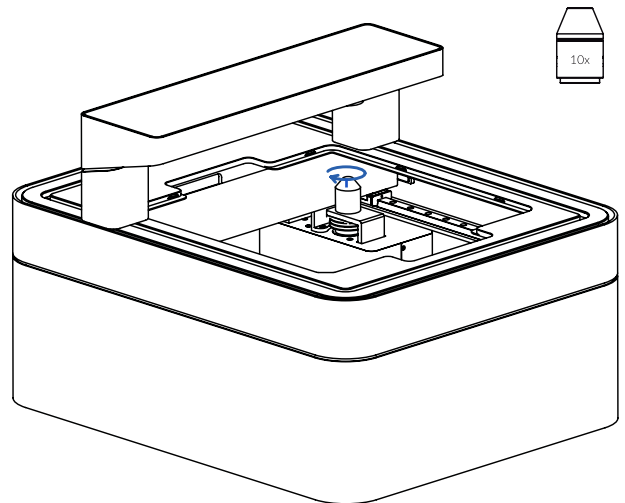
4.4   Mounting the Objective Lens

First, remove the microscope cap mounted in the optics cube of the main CELLCYTE X unit.
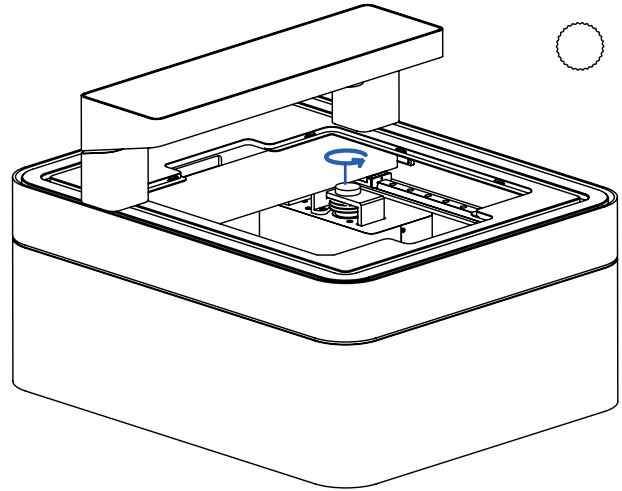
Figure 7 Remove microscope cap.

Then, proceed to screw in the provided objective lens.

Note: The objective lens can be sterilized with ethanol before being mounted into the CELL-CYTE X. Make sure that there is no ethanol residue left on the top lens of the objective after sterilization.

Figure 8 Screw in the provided objective lens.

4.5 Setting up CELLCYTE X inside an incubator

To set up the CELLCYTE X inside an incubator, follow these steps:

1 Place the CELLCYTE X inside the incubator. Make sure that the transmission bar can move freely inside the incubator. Depending on the dimensions of the incubator, the CELLCYTE X can be placed either with the logo facing out of the incubator (recommended if possible), or with the logo facing sidewards.

2 Connect the USB-C data cable and DC power cable between the CELLCYTE X instrument and computer unit (**Figure 9**). Many incubators have a hole on the back side wall that can be used to pass the cables. To ensure best operating conditions of the incubator, pass the two cables through this hole and seal the opening afterwards.
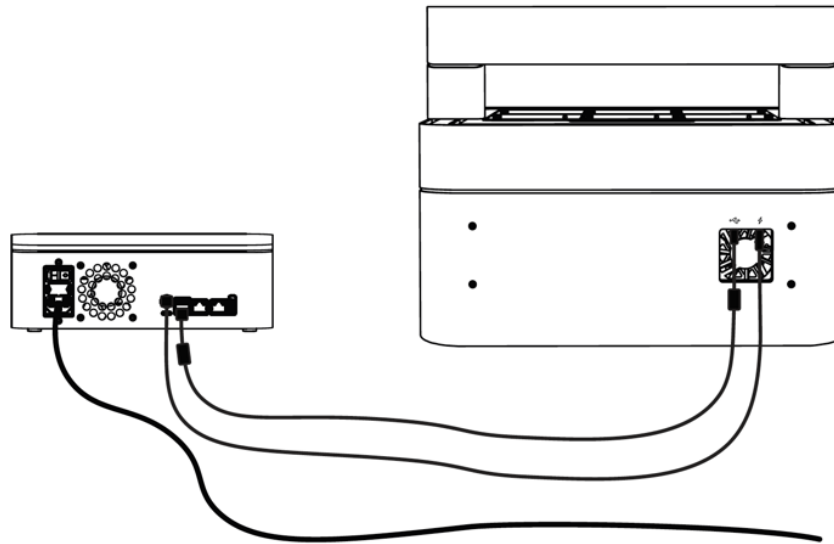
3 Connect the CELLCYTE X computer unit's power outlet **(Figure 4)** to a grounded wall socket using the included power cord.

Always connect the CELLCYTE X to a grounded outlet. Connecting to an ungrounded outlet can cause equipment damage and personal injury.

4 Use the provided ethernet cable to connect the CELLCYTE X computer unit to the ethernet port or wall socket. If no ethernet wall socket is available, you can also connect the CELLCYTE X to a Wi-Fi network, or connect the CELLCYTE X directly to the laptop/PC using the ethernet cable. The different connection methods are described in detail in the next chapter.

5 Turn on the CELLCYTE X using the power switch on the back of the computer unit (**Figure 4**).

6 Let the system equilibrate to the temperature and humidity levels of the incubator for at least 30 minutes before starting a study.

5. Connecting to CELLCYTE X

5.1 CELLCYTE X Setup using an existing network

While you can work with the CELLCYTE X without using an existing network, the preferred setup is to connect both the CELLCYTE Computer Box and the Laptop/PC(s) running CELLCYTE Studio to the same existing network - preferably via Ethernet.
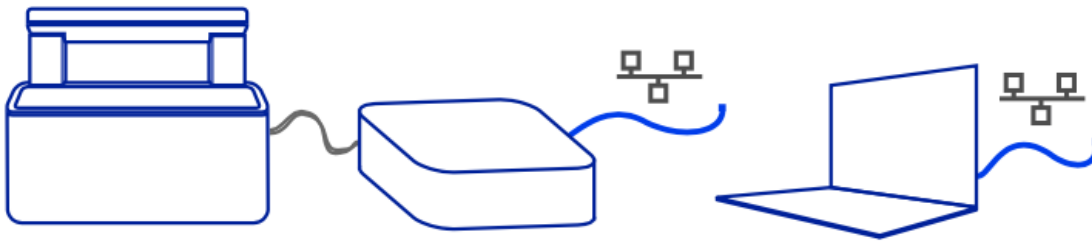

Figure 10

If you use an existing network, it is important that both CELLCYTE Computer Box and the Laptop/PC running CELLCYTE Studio are connected to the same (sub) network.

5.2 Network Connection Setup

Again, most important the laptop/PC and the control unit need to be connected to the same (sub) network in order to see each other. If you want to setup via ethernet make sure there is an active ethernet wall port close to the device.

There are a lot of different networks out there. The flowchart below should guide you to request the appropriate support you will need from your IT department. Please relay the desired connection setup to your installation specialists.

*If you want to run CELLCYTE Studio on the PC you are already using, you can check if it is connected to a DHCP managed network by opening the network center **(figure 11)**:
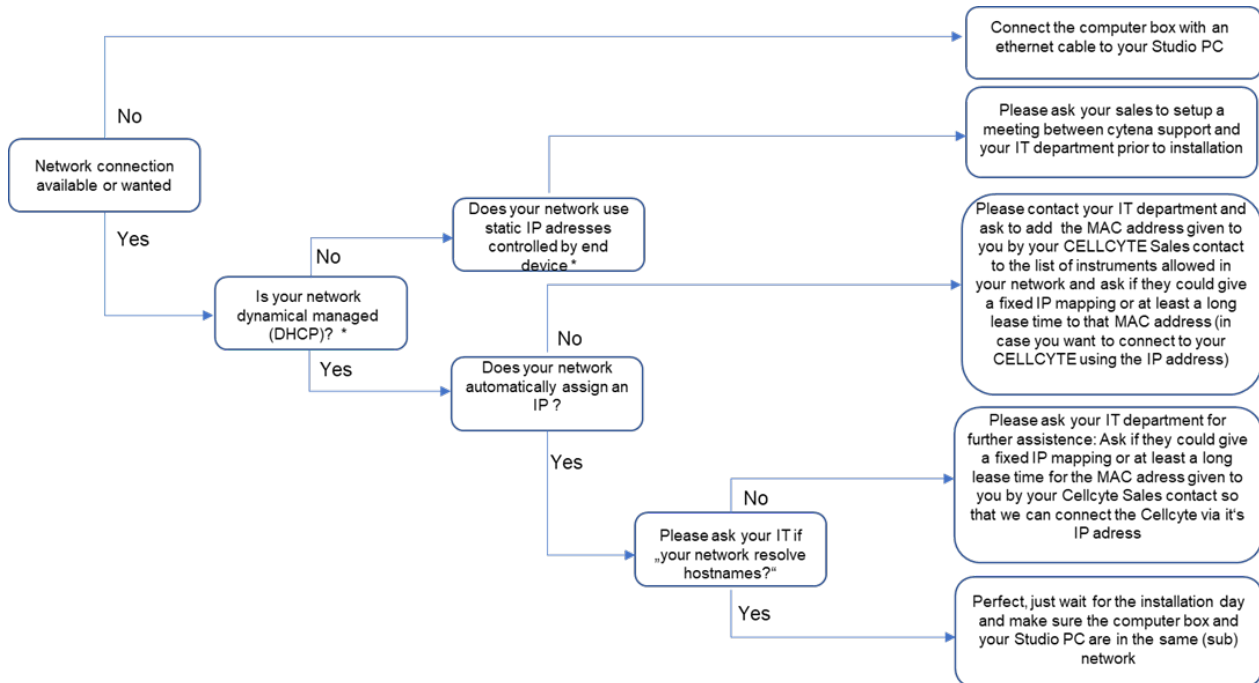

Figure 11

Click on the Network icon on the bottom left of your screen and then right click. Choose "Open Network Internet settings".
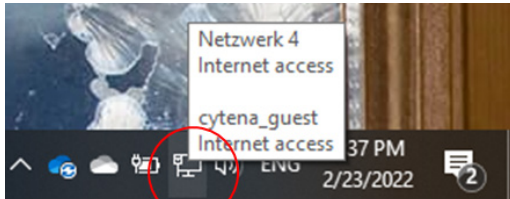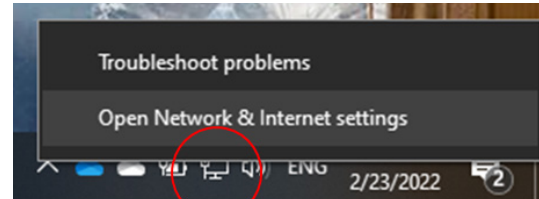

Figure 12

Figure 13

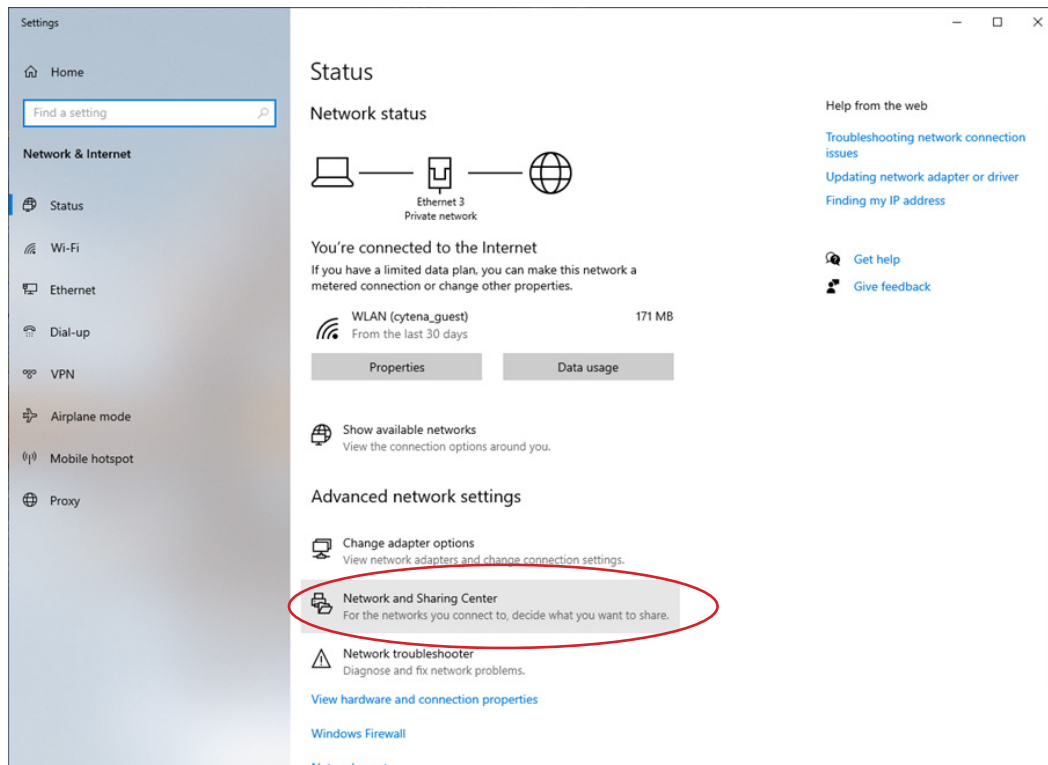Open "Network and Sharing Center"

Figure 14

Choose the right network your computer is connected to (in this example it is Ethernet 3).
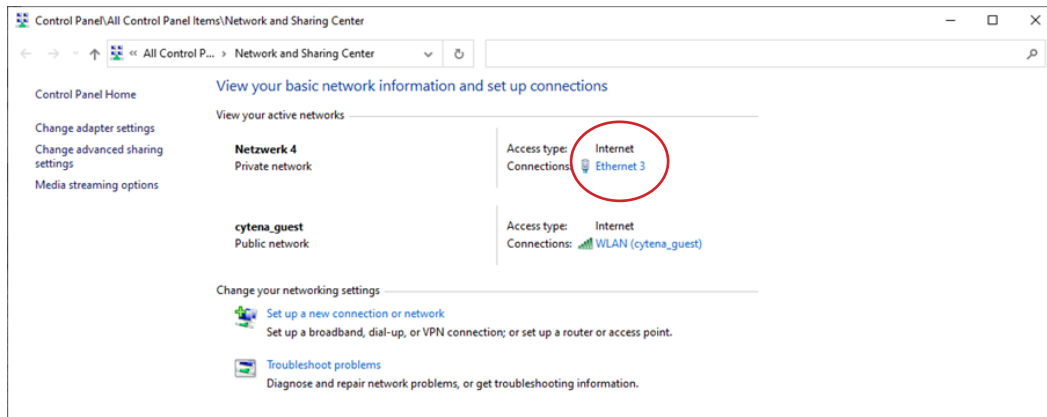

Figure 15

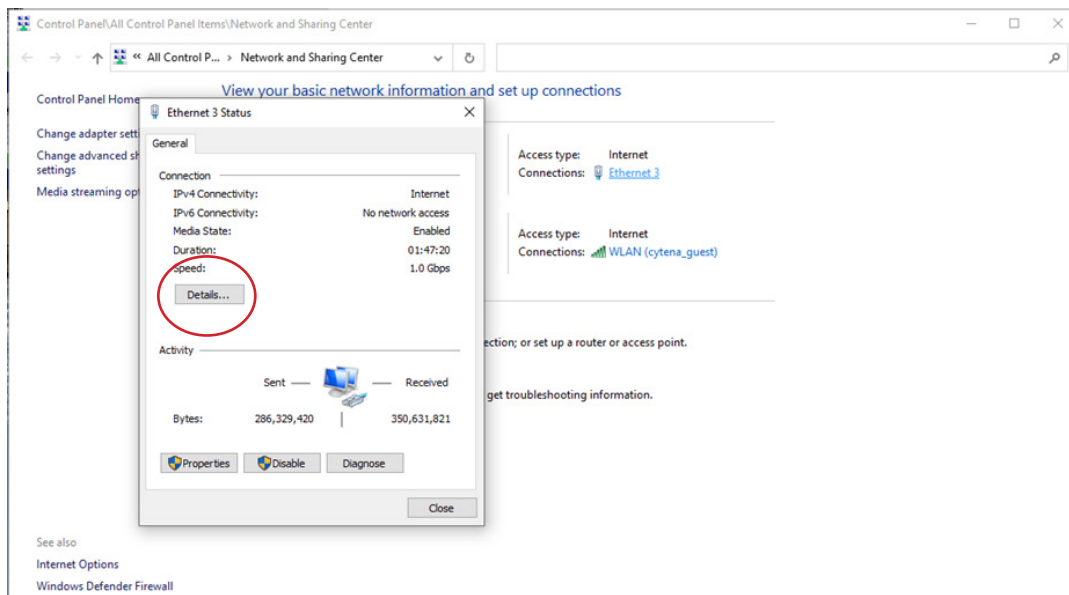Open "Details…" for the respective network connection.

Figure 16

Check within the Details if DHCP is enabled for this network connection and the respective IP address you got.
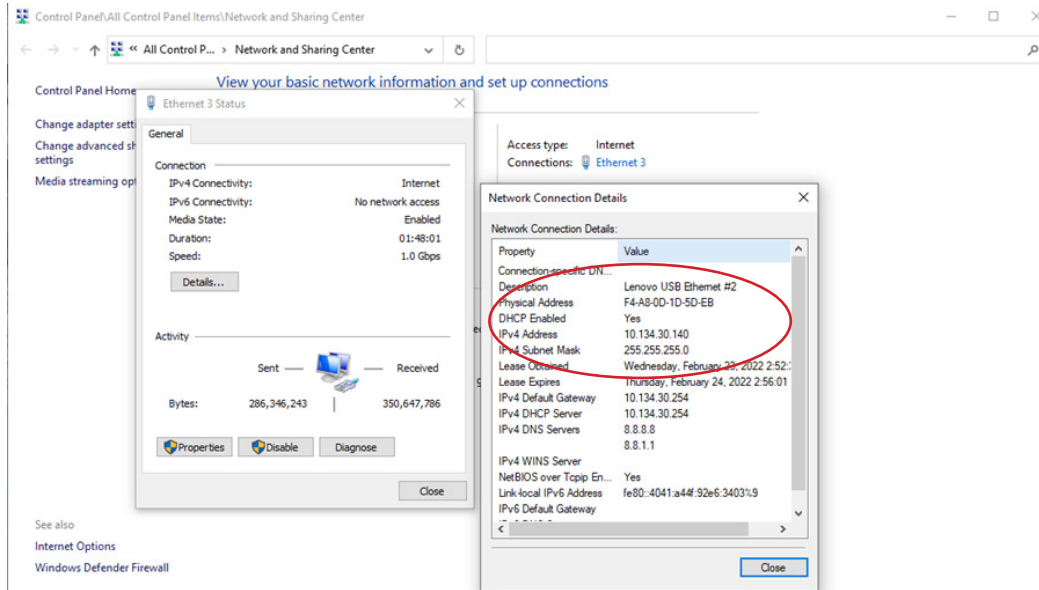

Figure 17

If DHCP Enabled is marked as "Yes" can expect a DHCP server to automatically assign IP addresses for your network.

5.3   Setup without using an existing network

The simplest setup that does not require any existing network is a point-to-point connection between CELLCYTE Computer Box and the Laptop/PC running CELLCYTE Studio via a dedicated Ethernet cable. However, this setup is limited in allowing only a single Laptop/PC running CELLCYTE Studio at a time.

For this setup you need connect the outermost Ethernet port of the CELLCYTE Computer Box to an Ethernet port of the Laptop/PC running CELLCYTE Studio via an Ethernet cable.

The Ethernet port of the Laptop/PC running CELLCYTE Studio needs to be configured to obtain an IP address automatically as depicted above. When trying to connect to the CELLCYTE Computer Box via CELLCYTE Studio you can either:

Use the hostname of the CELLCYTE Computer Box (cellcyte-x-c-<serial-number>)

OR

Use the fixed IP address 169.254.1.1 of the outermost Ethernet port of the Computer Box

Figure 18

This setup should give you good transfer speed however you are limited in position to the length of your Ethernet cable and one connected Studio PC at a time.

Hint: If your Laptop/PC running CELLCYTE Studio is connected (in addition) to a network that is connected to the internet you can use your DNA cloud user login. If not, you will have to work with the LocalUser account.

Figure 19

Feel free to forward this document along with our technical network-setup info sheet to the IT member responsible for your facility/lab so we can setup the system with you as soon as possible. We are very excited to get you up and running with the CELLCYTE X soon!

5.4   Preinstallation FAQ

Q: Is DHCP the only Network protocol that is supported?
A: NO, it can also work with fixed IP Protocols or without any Network

Q: Can I access my CELLCYTE from Home?
A: In general, yes if you can access the Network the CELLCYTE is connected to from Home for example by a VPN connection

6. Getting Started

6.1 System Requirements for laptop/PC

We recommend the following computer configurations for the smooth operation of our software:

- OS: Microsoft Windows 10 Operating System (64-bit)
- CPU: 2 GHz or faster Intel Core Duo Processor
- RAM: 4 GB or more
- Storage: Hard disk with at least 100 GB of free space
- GPU: NVIDIA GPU with 6 GB of VRAM or more*. Non-Nvidia GPUs may not work well or at all.

  For rendering small (<4 GB) 3D data sets, a minimum of 2 GB of VRAM is needed.

Optimal computer configuration for image analysis:

- OS: Microsoft Windows 10 Operating System (64-bit)
- CPU: 3.5 GHz Intel Core i7 Processor or better
- RAM: 16 to 64 GB
- Storage: 500 GB SSD drive (or larger) plus hard disk with at least 100 GB of free space
- GPU: NVIDIA GeForce GTX 1080 - 8 GB

6.2 Software Installation and update

The installer file provided with the product will install one program, CELLCYTE Studio. The respective icon is represented in **Figure 13.**


Figure 20 CELLCYTE Studio icon.

Note: Please verify that you have installed the latest version of the software. The latest version of CELLCYTE Studio can be downloaded from https://dna.cellink.com. To update the software, first uninstall CELLCYTE Studio before installing the new software. The firmware (heartOS) can be updated in the Settings menu in CELLCYTE Studio (see user manual), where the current version is displayed.

6.3   Initial Setup in CELLCYTE Studio

Double click on the icon to launch CELLCYTE Studio. When starting CELLCYTE Studio for the first time, you will be asked to complete the initial setup in 4 steps. The initial setup can also be skipped and done later via the settings page.

STEP 1. Connect to CELLCYTE X for the first time
Enter the CELLCYTE X seven-digit serial number, which can be found on the back of the computer unit and proceed to the next step (**Figure 21)**.
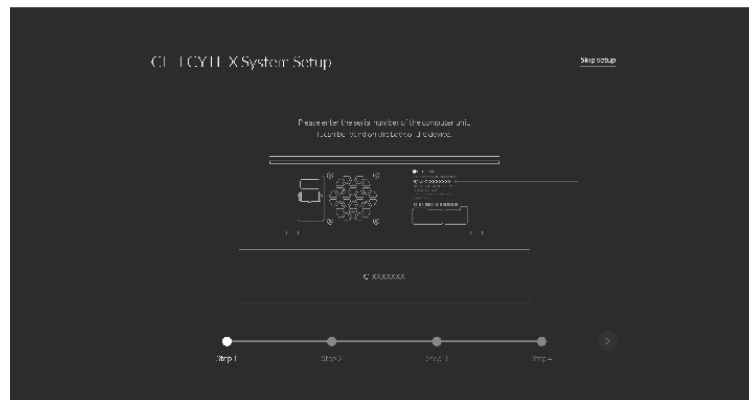

Figure 21 Type in CELLCYTE X serial number to connect to your device.

## STEP 2. Provide network credentials (if needed)

If the CELLCYTE X is connected to the network via ethernet (using an existing network), and your laptop/PC is connected to the same work via ethernet or WiFi, the connection between CELLCYTE Studio and CELLCYTE X will be established automatically and you can proceed directly to **STEP 3.**

If the CELLCYTE X is connected directly to the laptop/PC via ethernet (point-to-point connection) the connection between CELLCYTE Studio and CELLCYTE X will also be established automatically and you can proceed directly to **STEP 3.**
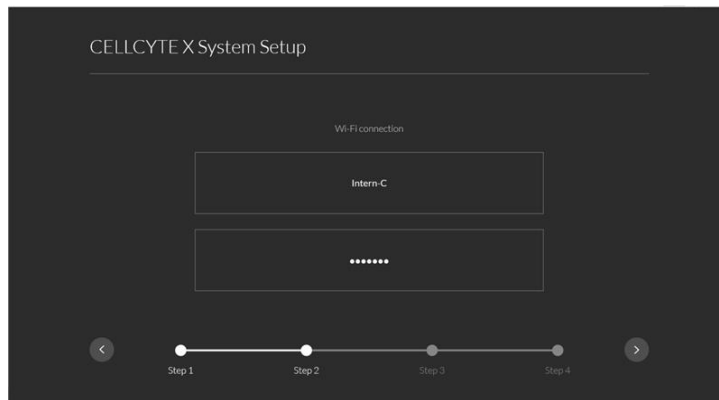
Figure 22 You can enter the WiFi credentials to connect CELLCYTE X to a WiFI network in **STEP 2**.
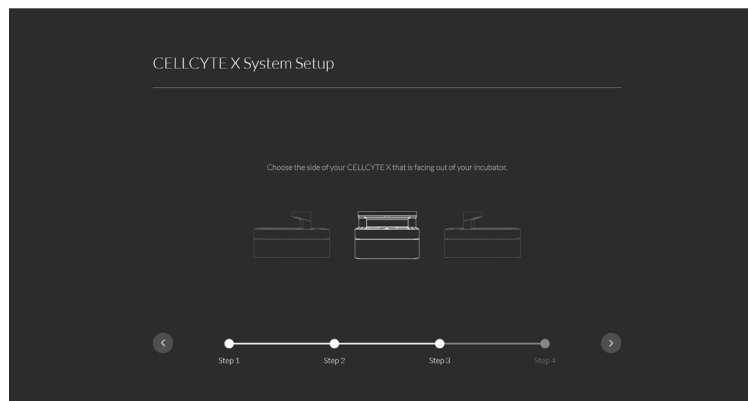
When you have successfully connected to CELLCYTE X, a green tick mark will appear next to your CELLCYTE X on screen **(Figure 23).**
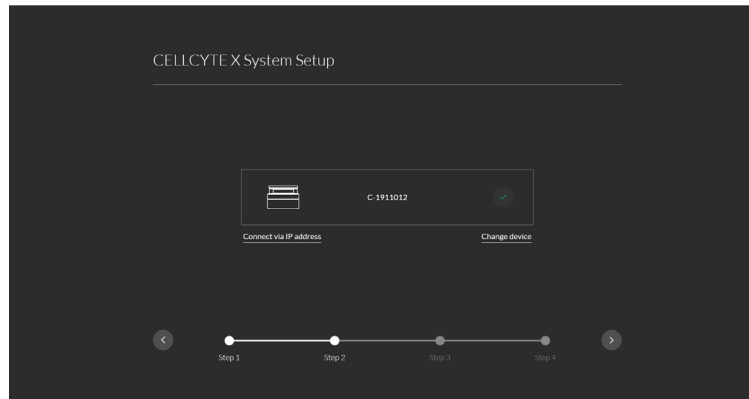
Figure 23 Successful connection to CELLCYTE X.
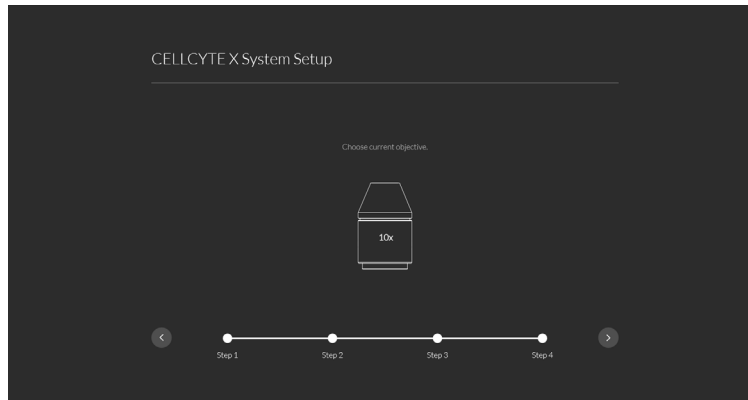
STEP 3. Select system orientation

Select the orientation of your CELLCYTE X system in the incubator **(Figure 24).** This selection affects how the vessel tray is displayed on the home screen.

Figure 24 Select the orientation of CELLCYTE X in the incubator.

STEP 4. Select objective

The system comes with a 10X objective **(Figure 25).** Confirm the selection and proceed.

Figure 25 Select the objective magnification (10X).

Once the initial setup is completed, you will be directed to the home screen (refer to the user manual for more information).

7. Understanding the CELLCYTE X Status Light

The CELLCYTE X computer unit includes an LED status light that indicates different modes of operation (**Figure 26**).

Breathing white	CONNECTING	CELLCYTE X trying to connect to network.
Solid White	READY	CELLCYTE X ready to image. No scan scheduled (empty timeline).
Solid Green	HOTSPOT	CELLCYTE X is in hotspot mode.
Solid Blue	WAITING TO IMAGE	CELLCYTE X ready to image. Study scheduled (entry in timeline).
Breathing Blue	IMAGING	CELLCYTE X scanning or about to start scanning (within the next 60 second).
Solid Red	ERROR	CELLCYTE X encountered an unrecoverable error (e.g. no response from imaging unit).
Breathing Cyan	UPDATING	CELLCYTE X is updating firmware (heartOS) and users can safely remove USB.
Yellow	UPDATE INITIATED	CELLCYTE X is ready for firmware update.

Figure 26 CELLCYTE X computer unit status light.

ECHO

A BICO COMPANY