



Air Sampling User Manual

Supplemental Lungfish™ Program Instructions





About Lungfish™

The Lungfish™ program is an open-source research collaborative with the goal of supporting organizations and communities to understand pathogen presence using wastewater and air sampling. This research seeks to transform complex biological materials into insightful scientific data that enables our partners to act more proactively and intelligently.

Air sampling research is an impactful tool that looks for pathogens and other biological signals directly in the air in our natural environments. By monitoring environments rather than individuals, we can take the 'pathogen pulse' of congregate settings in a single sample, without having to rely on costly and invasive individual testing.

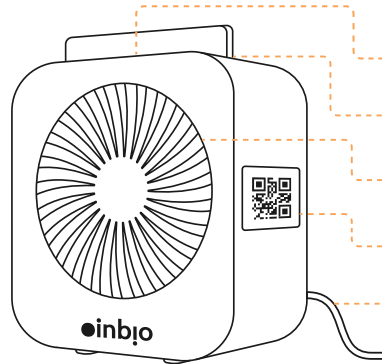
We monitor change to generate insights that inform action.

IMPORTANT: BEFORE COLLECTING AIR SAMPLES CAREFULLY INSPECT THE CONTENTS OF THE DEVICE AND KIT TO CONFIRM THERE ARE NO MISSING OR DAMAGED PARTS OR MATERIALS. IF THE DEVICE, PARTS OR MATERIALS ARE WORN OR DAMAGED DO NOT USE. CONTACT LUNGFISH FOR REPLACEMENT MATERIALS.

Kit Overview

The Air Sampler (Sampler) comes with an adapter. The sampling materials come pre-packed in sampling sets. One sampling set contains a sample inside a resealable plastic bag, inside a mailer, and covers a complete sampling session, from collection to return shipping.

DEVICES (PHONE NOT PROVIDED)



The Apollo™
Air Sampler

LED INDICATOR

SAMPLE SLOT

DEVICE FRONT
FOR AIR INTAKE

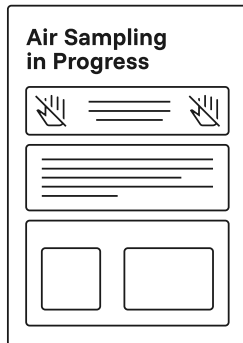
SAMPLER BARCODE

DEVICE PLUG

PHONE WITH THE
LUNGFISH APP INSTALLED



SAMPLING MATERIALS (INCLUDED IN KIT)



SAMPLES

x36

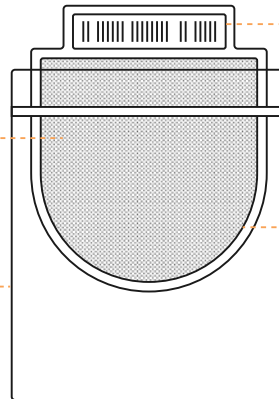
[CAPTURES AIR FLOW
THROUGH SAMPLER]

RESEALABLE
PLASTIC BAGS

x36

[SAFELY STORES
SAMPLES]

LAMINATED SIGN FOR
DISPLAY BY SAMPLER



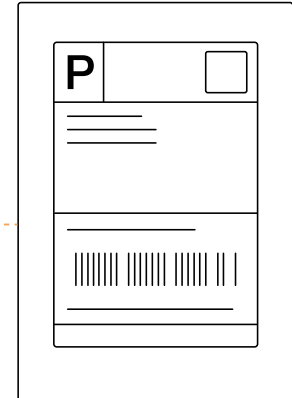
SAMPLE BARCODE

BUBBLE MAILERS

x36

[SECURES SAMPLES
DURING SHIPPING]

**DO NOT TOUCH
THE INNER FILTER
MATERIAL!**





Download our app

01



DOWNLOAD THE LUNGFISH APP

Scan the QR code above or navigate to **<https://pwa.lung.fish>**. On Android, tap “Install App”. On iOS, select the share menu, tap view more, then select the “Add to Home Screen” option. The app is now installed and can be found in your app drawer or home screen.

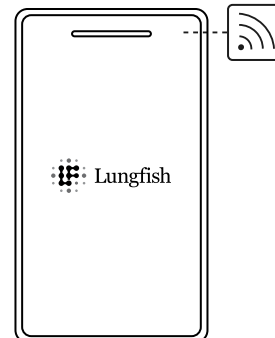
02



SIGN INTO THE APP

You can sign in directly via your organization account (e.g., work or school email). If your site does not have this type of account, you can sign in using a separate email and password.

03



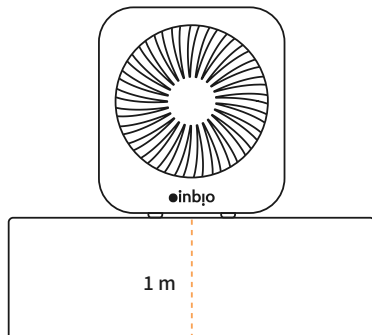
INTERNET CONNECTION

Make sure your device has an internet connection (Wi-Fi or mobile data). Allow the app to access your camera and location.



Setting up your Air Sampler

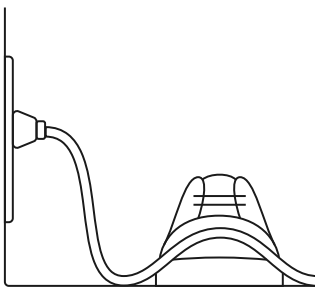
01



CHOOSE LOCATION

Place the Sampler on a flat, stable surface approximately one meter (3 ft.) off the ground with easy access to a power outlet.

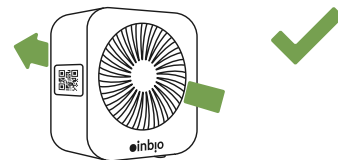
02



SECURE CORD

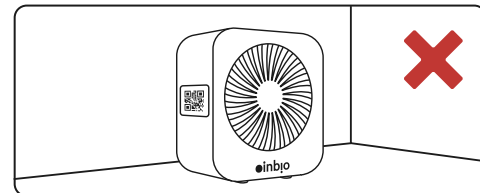
Make sure the cord is secure and cannot be pulled or tripped over.

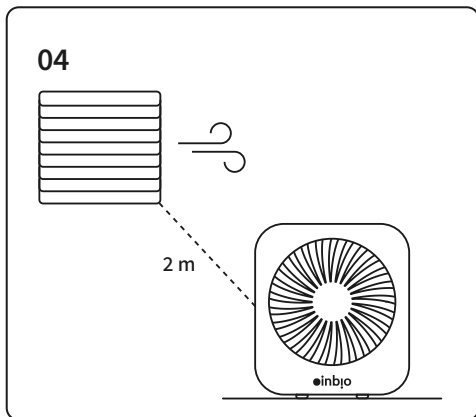
03



POSITION AIR SAMPLER

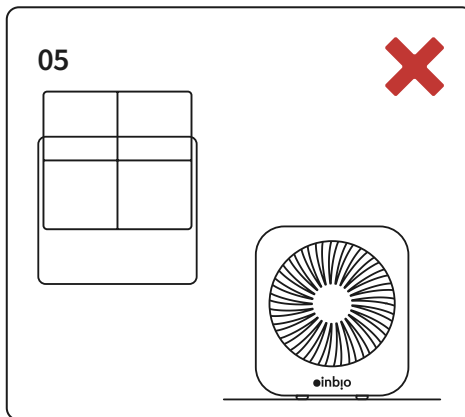
The front of the Sampler is the air intake. It should face the room or area you want to monitor. Make sure airflow is not blocked. Do not place the Sampler against a wall or in a corner.





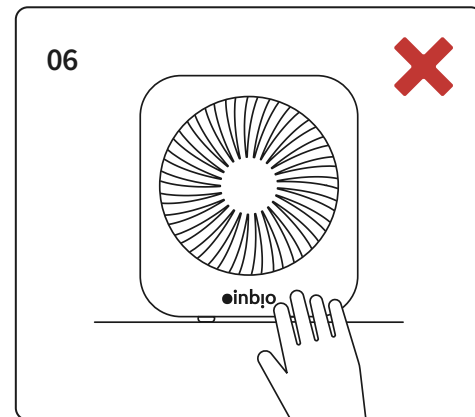
SAMPLER LOCATION

Keep the Sampler two meters (6 ft.) away from heating or air conditioning vents.



SAMPLER LOCATION

Do NOT place the Sampler in a room with open windows. If windows cannot be closed, place the Sampler as far away from them as possible.



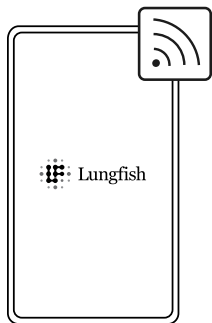
SAMPLER SAFETY

Keep the Sampler out of reach of children and animals.



Starting a sampling session

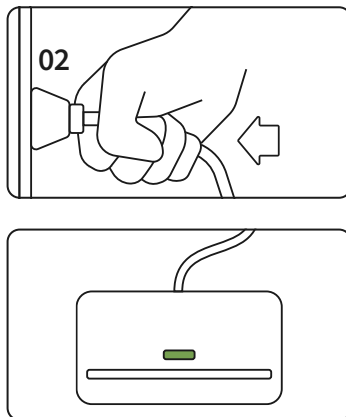
01



SIGN INTO THE APP

Have your phone or tablet with you, connected to the internet and logged into the Lungfish app.

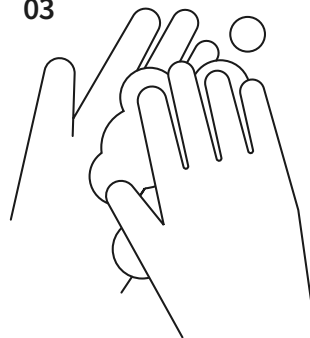
02



POSITION SAMPLER

Confirm the Sampler is properly positioned, then plug it into a power outlet. The LED light on top confirms the Sampler is running.

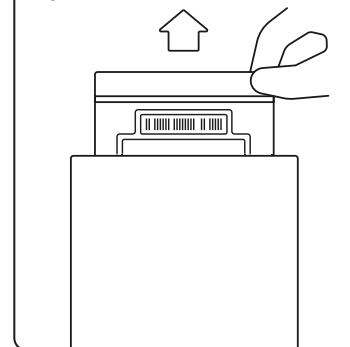
03



WASH HANDS

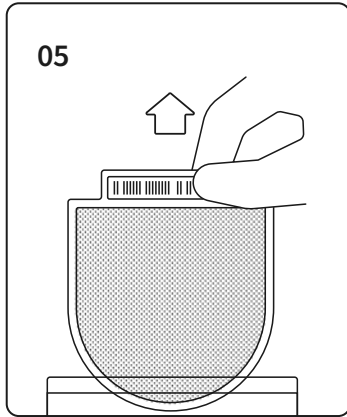
Wash your hands before handling sampling materials.

04



UNPACK SAMPLING SET

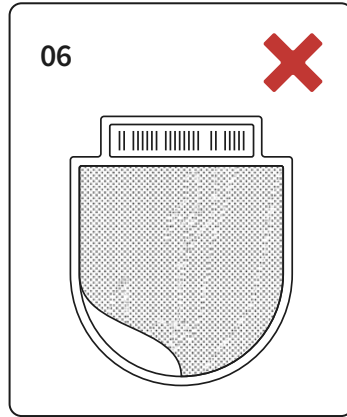
Grab one unused mailer from the kit, open it and take out the plastic bag inside.



RETRIEVE SAMPLE

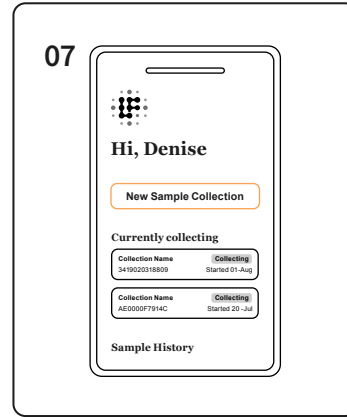
Take the new sample out of the plastic bag. Hold the sample only by its outer frame.

Do not touch the inner filter.



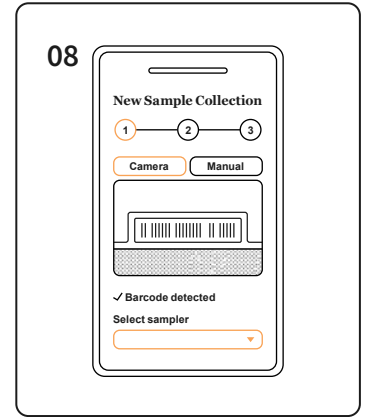
INSPECT SAMPLE

Visually inspect the sample. Do not use it if it appears damaged or contaminated. Instead, use a new sample.



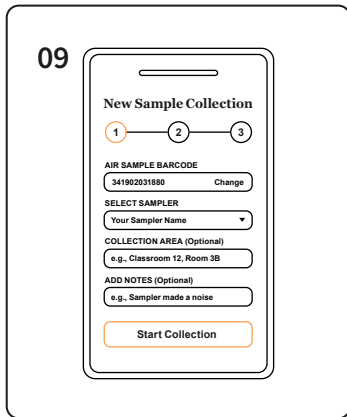
START SESSION IN THE APP

Open the Lungfish app. From the Samples tab, select “New Sample Collection”.



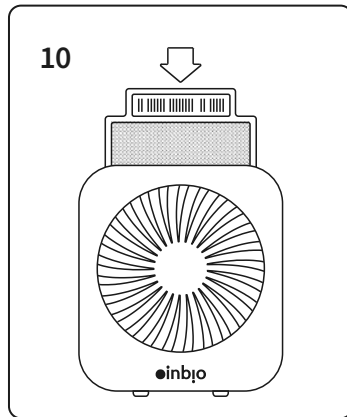
SCAN SAMPLE BARCODE

Scan the sample barcode using your camera. Select your Sampler from the drop down menu (if you only have one Sampler, it will be filled in automatically).



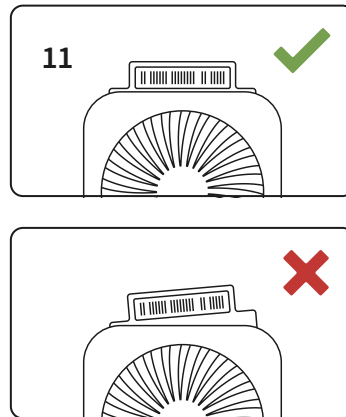
START COLLECTION

Make sure all the information is correct, then click “Start Collection”. Leave the Sampler running until your site’s scheduled collection period is complete, then return to the app to finish the collection.



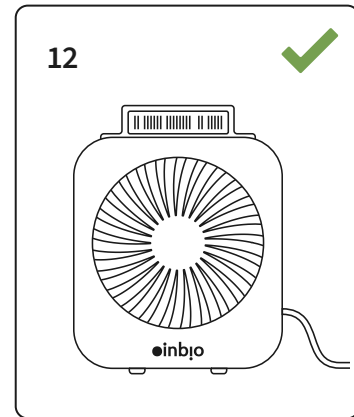
INSERT SAMPLE

Insert the sample into the slot at the top of the Sampler. Slide it in with the curved end facing down. If needed, gently push on the sample’s plastic corners to help it in.



CHECK SAMPLE

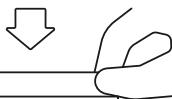
Check that the sample is fully inserted and does not stick out.



RUN SAMPLER

Leave the Sampler on and running the entire time you are sampling. The Sampler **MUST NOT** be turned off at any part of the process.

13



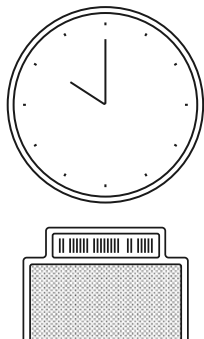
STORE MATERIALS

After inserting the sample, return the plastic bag and mailer to the kit box. These will be re-used later for shipping back the sample.



Ending a sampling session

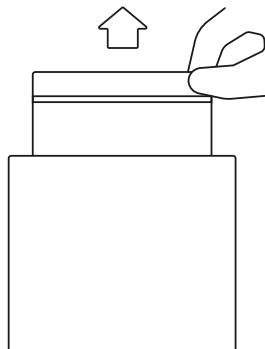
01



REPLACE SAMPLE

Once your sample has been running for a while (the sampling session time can be ~1-7 days, depending on your site), replace the sample. Keep the Sampler ON the entire time.

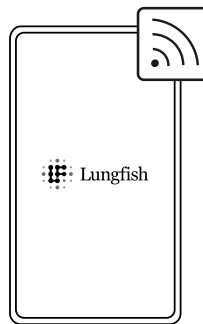
02



RETRIEVE MATERIALS

Grab the previously opened plastic bag and mailer from the kit box.

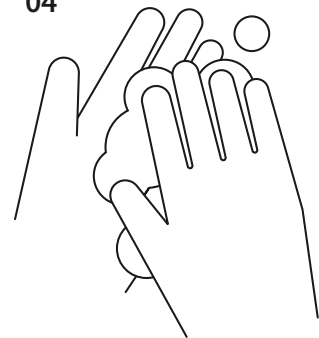
03



HAVE APP READY

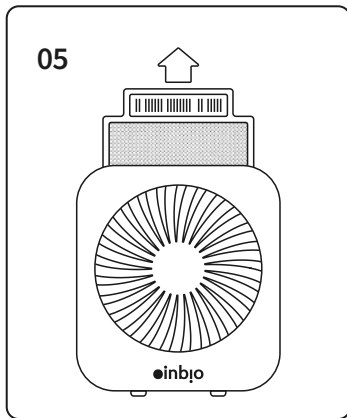
Have your phone or tablet with you, connected to the internet and logged into the Lungfish app.

04



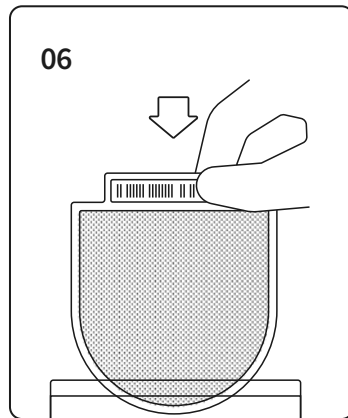
WASH HANDS

Wash your hands before handling sampling materials.



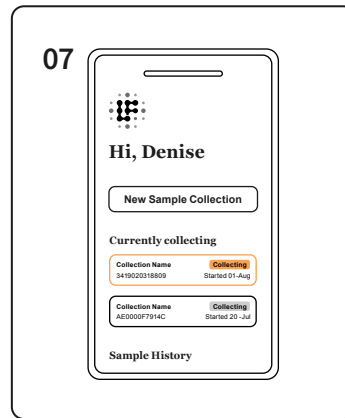
REMOVE SAMPLE

Remove the used sample from the Sampler by pulling up and out on the plastic tab. Hold the sample only by its outer frame. **Do not touch the inner filter.**



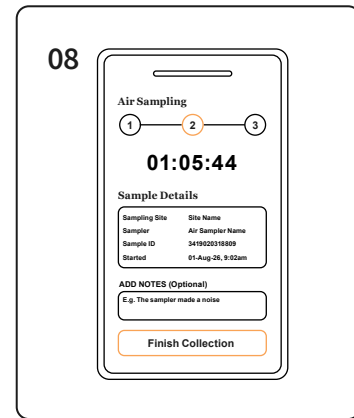
SEAL SAMPLE

Put the used sample directly into the plastic bag and seal it tightly.



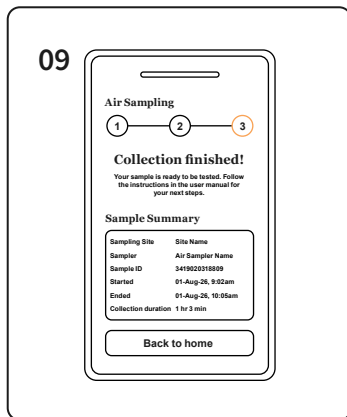
END SESSION IN THE APP

In the Samples tab, you can see all the samples that are currently collecting. Select the sample you want to finish by looking for its details and “Collecting” status in the list, then clicking on it.



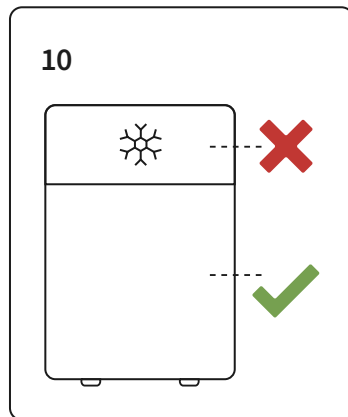
FINISH COLLECTION

By clicking on the sample, you can see how long it has been collecting for. Once your sample has completed your site's scheduled collection period, click “Finish Collection”.



SAMPLE HISTORY

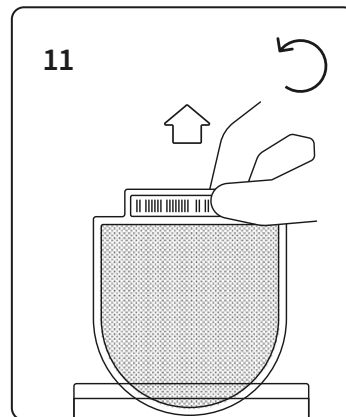
In the sample history section, you can see all of your previously collected samples. Click on a sample to see more details.



STORE SAMPLE

Store the bagged sample at room temperature (15–25°C / 59–77°F) if shipping within 48 hours, and in the refrigerator (2–8°C / 36–46°F) if shipping will take longer than 48 hours.

Do not freeze.



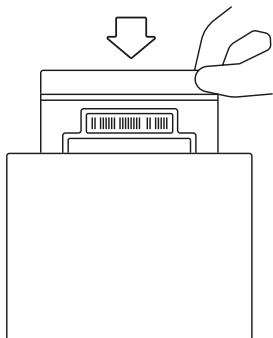
START NEW SESSION

Immediately start a new sampling session by repeating Part 01 with a new sample.



Shipping your samples^{*}

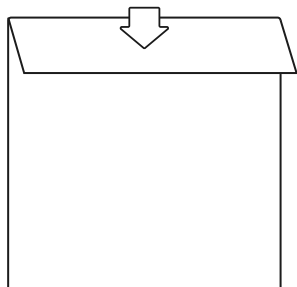
01



PLACE IN MAILER

Put the plastic bag containing the used sample into the mailer.

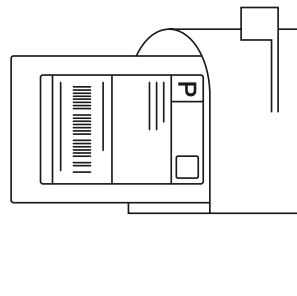
02



SEAL MAILER

Seal the mailer tightly.

03



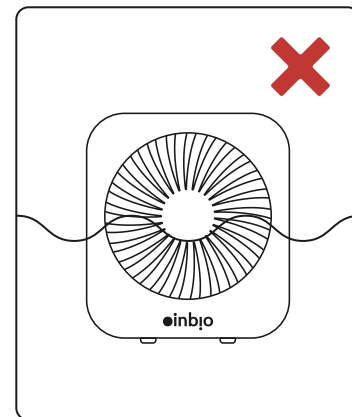
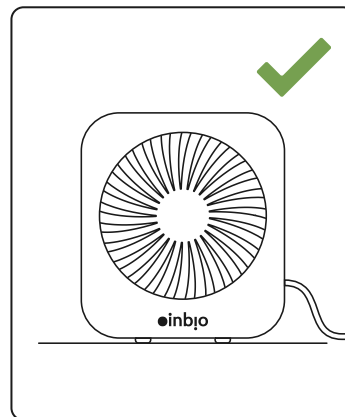
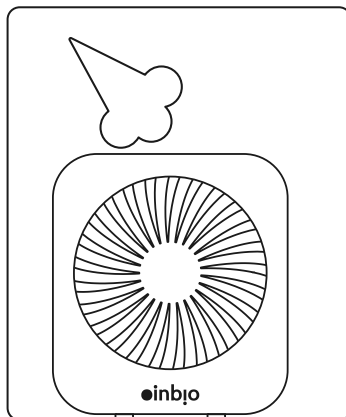
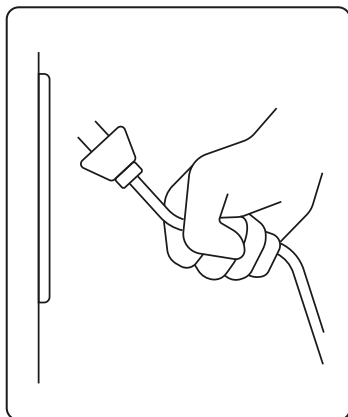
SHIP MAILER

Ship the mailer according to the instructions received by your site from your Lungfish contact.

*** If you are conducting sample testing on site, the shipping steps do not apply. Please proceed to the Elution Kit manual included with your elution kit.**



Sampler maintenance



DUST REMOVAL

If dust accumulates on the device, turn the Sampler off by unplugging it, then use compressed air to remove loose dust.

CLEANING SAMPLER

After dusting, run the Sampler for 10 minutes without a sample to clear any loose particles. **Never immerse the Sampler in water or other liquids.**

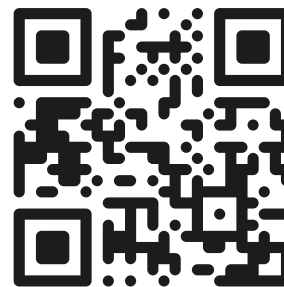


Contact

For any questions or issues with your kit or Sampler — including setup, sampling, shipping, or your sampling schedule — contact **info@lung.fish**

This manual and additional information are available at **<https://lung.fish>**

Scan the QR code on the right to learn more.





Liability Disclaimer for Environmental Air Sampling Program

This environmental air sampling research program (the “Program”) is intended solely for the collection and analysis of airborne particulates for the limited purpose of identifying the potential presence of pathogens in ambient air for scientific research purposes. The Program is not designed, intended, or certified to diagnose disease, assess individual health risk, or serve as a substitute for professional medical, industrial hygiene, infection prevention, or environmental health advice. Any data generated from the study and provided to users is for informational purposes only. By participating in this Program, the user acknowledges and agrees to the following:

1. No Medical or Health Determination

Results obtained from participating in the Program are informational only and do not constitute medical advice, diagnosis, treatment recommendations, professional advice, infection prevention services or public health surveillance services. The presence or absence of detected pathogens does not confirm actual exposure risk, infection, or safety of any environment. Participants acknowledge that this research does not qualify as human subject research, and all biological materials collected are aggregated and deidentified. Any data collected as part of participating in the Program will be disclosed in accordance with any written agreement, participating organization consent or Lungfish’s privacy policies.

2. Limitations of Detection

Participation in the Program may not detect all pathogens present in the air and may produce false positives or false negatives. Environmental conditions, sampling methods, user operation, and other external factors can affect accuracy and reliability.

3. User Responsibility

The user assumes full responsibility for the interpretation and use of any data generated by and through the Program. Decisions made based on such data, including but not limited to health, safety, occupancy, or operational decisions, are made at the participant’s and user’s own risk. Failure to follow handling instructions may expose a sample handler to pathogens collected on the filter which may cause them illness, disease or death.

4. Not a Safety Guarantee

Participation in the Program does not guarantee that an environment is safe, free from pathogens, or compliant with any regulatory or safety standards.

5. No Liability

To the fullest extent permitted by law, Lungfish, all manufacturers, distributors, and affiliates disclaim any and all liability for any direct, indirect, incidental, consequential, or special damages arising out of or related to the use of, misuse of, or inability to use the Program kit materials, devices, applications or its results.

6. Regulatory Compliance

The Program and related materials or devices are not approved or cleared by regulatory authorities (e.g., FDA/CE) for specific uses. It is the user’s responsibility to ensure compliance with all applicable laws, regulations, and guidelines.

7. No Warranty

The Program kit, devices and materials are provided “as is” without warranties of any kind, express or implied, including but not limited to warranties of accuracy, reliability, merchantability, or fitness for a particular purpose. By participating in the Program, the user confirms that they have read, understood, and agreed to this disclaimer.

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Lungfish