ZAM – Fungarium Living Laboratory

Erlangen, Germany · Open to everywhere and everyone

An open laboratory in Erlangen, Germany, for experimenting with fungi, mycelium materials, living systems and their surrounding ecosystems.

We grow. We measure. We build. We share.

- ZAM - Fungarium Living Laboratory
- Building a window into the Mycobrain

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FUNGARIUM × ZAM — Living Laboratory

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> *Where fungi and semiconductors touch and talk. Where learning is a path of patience and discipline."*

Read the lab stories · Join in · Visits · Contact

A place to grow ideas together

Come with a question, a skill, a sketchbook or simple curiosity. We want to explore fungi and the systems around them through shared experiments, art, making, observation and documentation.

The work is still taking shape. This wiki is our open notebook: what we try, what we learn, what remains uncertain and where another person can help.

1. Ask a question.
2. Make and try together.
3. Collect and examine evidence (we try to help you with that).
4. Share what happened.

Art and nature

You might want to measure a change in a culture, draw its shapes, photograph its development or make something with mycelium. We want space for artistic exploration and careful scientific work, with each clearly described on its own terms.

Look closely. Make something. Share what you see. Learn from each other.

From the lab

We have some stuff going on in the lab, and we are looking for people like Steve. Who like to spend time learning and coupling ideas and DOING things. Besides helping at the local Kitchen, he is developing some gadget for us.

Story	What you will find	Status
A laboratory in the making	The room, materials and work still to document	In Progress
Building a work area in the tent	The tent and filter-panel assembly	Completed
Making monitors together	Electronics, displays and a shared workbench	Great time

Areas to explore

These are areas of interest. Project and experiment records have not yet been linked here.

- **Fungi and materials:** growing, making and documenting materials with mycelium.
- **Nature through art:** drawing, photography and creative work with living forms.
- **Questions and evidence:** tools to observe, measure, organize and share what we learn.
- **Soil and Fungi:** Develop experiments and constant monitoring of soil with different fungi, learn their importance.

Join in

You don't need to be a mycologist to contribute. You might want to become one afterwards.

Art, biology, code, data, electronics, fabrication, photography, writing and teaching can all help. Beginners are welcome to start a conversation. JUST TALK TO US CHIEF!

Participation mode	Meaning
IN_LAB	Join ZAM, learn and work at the laboratory in Erlangen
REMOTE	Contribute from elsewhere (git based)
HYBRID	Combine remote work with time in the lab

Potential ways to help include captioning photographs, documenting a build, drawing a system diagram or reviewing code. These are invitations to discuss a task.

Each confirmed task should state its expected outcome, experience level, time commitment, participation mode, contact and safety or supervision needs. Contributions will be documented and credited with the contributor's permission.

Wanna Visit?

We are based in Erlangen, Germany. **We are located at the ZENTRUM für AUSTAUSCH und MACHEN (ZAM).**

People

Dr. Ruben Casillas and Maria del Pilar Schnake are helping get this initiative started and together with the team and voluntaries at ZAM it has been kept alive.



Contact

Send us an email at info@fungarium.de and let us know know your idea and how can this place and the ZAM initiative help you achieve it.

Likewise, contact the ZAM initiative to let us know.

Fungarium · ZAM

A laboratory in the making

> From a dirty cellar to a living laboratory. A quest to make the best out of given spaces.

A room becomes a place to explore when people bring in materials, make space for work and keep asking what it could become. Here is an early look at the Fungarium × ZAM living laboratory as it takes shape.

The story so far

The laboratory space is still being prepared. The available photographs show shelving, stored materials, cabling and an unfinished room. They provide a record of work in progress, but do not establish which tasks were completed on which date.

We want the build itself to be understandable: what changed, why it mattered, who helped and what still needs attention.

This was the status on May 2026



Now we have a clean place with lab and shelves for experiments on September 2026



Help tell this story

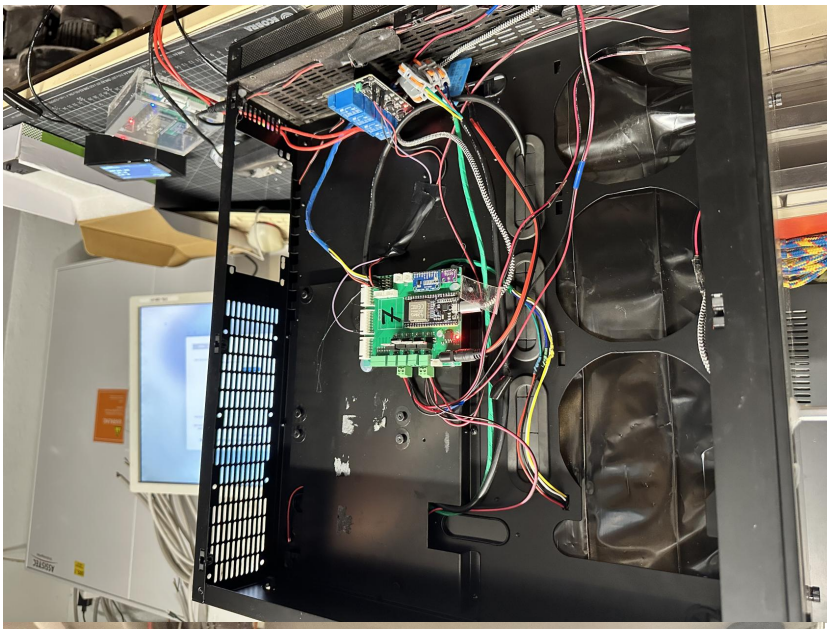
We need to bring people together and we need to let people with interest in Mycology and DIY electronics to join together. We bring the ideas and learning topics so that learning and exchanging ideas is fun and fruitful.

JOIN IN!

Making monitors with Steve and Ruben

In between september and october of this year two strange fellows got together in the ZAM-Fungarium to establish some rules and protocols for the ESP32 based controllers at Fungarium.

We have a GITHUB where you can see the codes, but are mostly interested in building awesome set-up to measure the development and see how we can capture the best growth and with the coolest hardware. In this session in particular we looked to reactivate some old boards and set ups and add some monitors to see the values.





Our development is barely starting and the next phase, which is to send the data to a bucket is on development.

Sources and revision

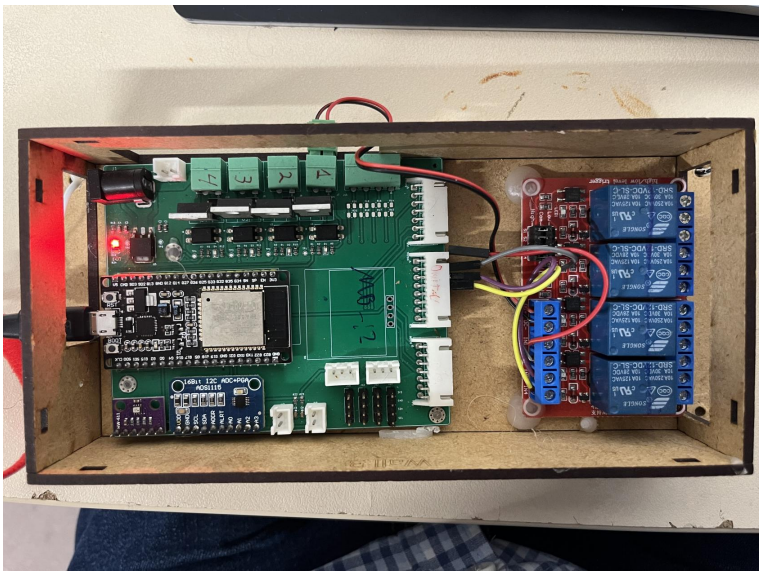
- 21 October 2026. Maintainer: Dr. Ruben Casillas

Building a window into the Mycobrain

A Display for Mycobrain

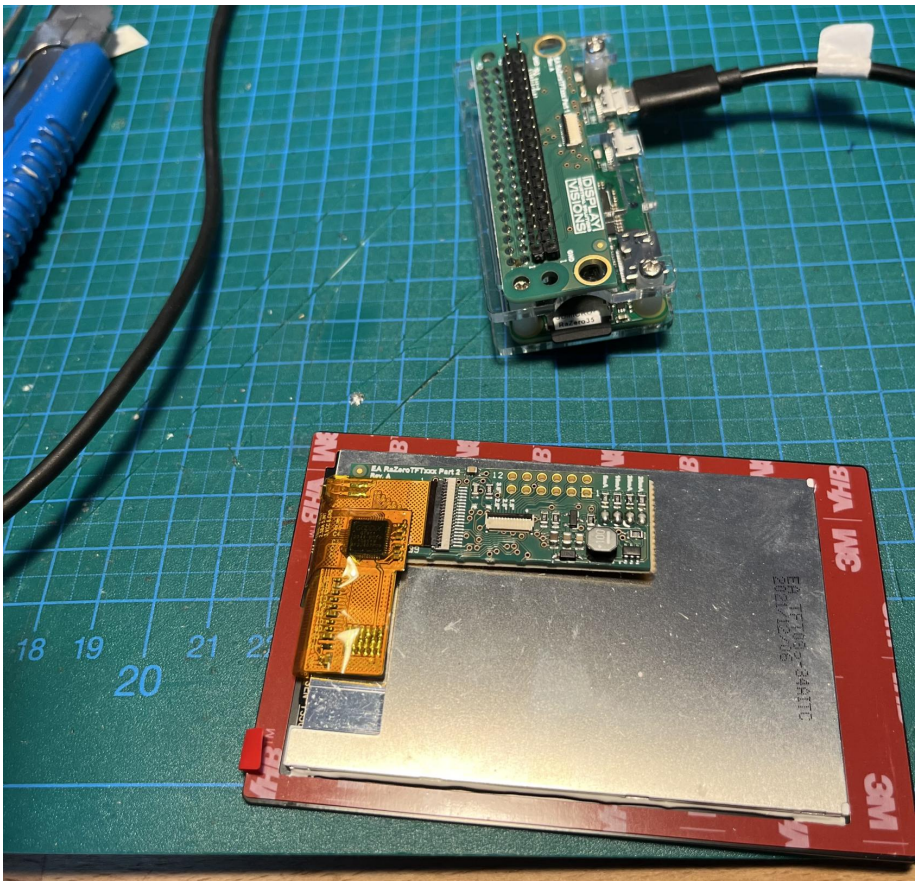
The Goal

The Mycobrain is an ESP32 based module that it set up to receive inputs from various sensors and also drive some outputs. The ESP32 is a flexible device that can even serve its own web page do display the captured information. Although the ESP32 can provide its own Web page, it was thought it would be cool if there could be a screen nearby the Mycobrain to display the data and provide a means to drive the outputs.



The Hardware Selection

Steve happened to have available a TFT display from Display Visions EA RaZero TFT, which seemed a good solution for a quick prototype. The kit contained an adapter for a Raspberry Pi Zero and a TFT 3.5" TFT display. The provider also has some libraries available to get started.



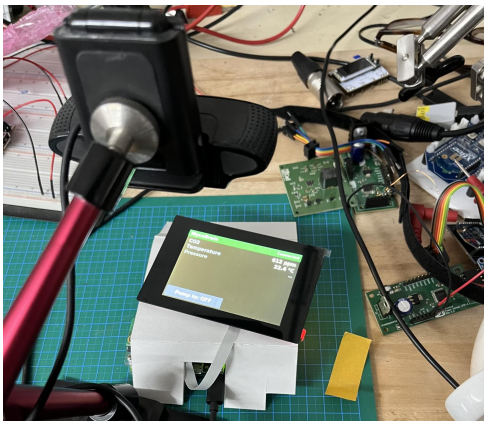
Bringing up the system

Steve was unsure on how to get this working but with the help of Claude, the task became very simple. The first things was to prove the toolchain and libraries. So the first task was to create a "Hello World" application where the "Hello World" string would follow a finger touching the screen. This would prove at the code can be build, the display can be accessed and text displayed and it also proved that the touch library was also functional.

The next task was to build the first UI over the Mycobrain. Claude was helpful to assess the functionality of the existing Mycbrain code and determine any available REST APIs. From there, a basic UI could be created that encompassed the display of temperature, humidity and CO_2 based on the REST APIs already available in the Mycobrain firmware.

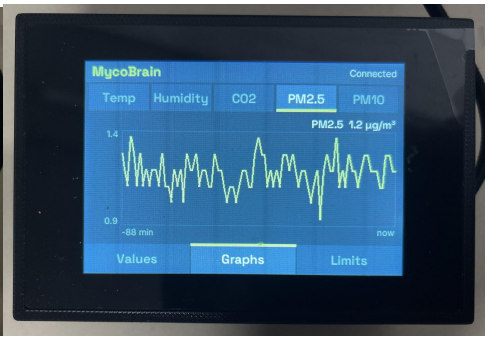
End Point	Purpose
api/status	The current values of the sensors being read
api/history	This values of the sensor values in an array of time stamped values.

A real help in this process was the use of a web camera trained on the display. This would provide a feedback loop to Claude which could then work independently to create the user interface by taking photos of the display and verifying any changes made.



It was not long and we had a fully functioning display over the Mycobrain, complete with graphs





Deployment

The final proof of the work was taking into the Fungarium lab at ZAM and attempting to get it working there. The first issue was the W-Lan connection. This was quickly solved but the screen has a set of special configuration files that needed to be adjusted and set into the display

```
./scritps/site_config.sh device set Nectar_Chamber_12.env
```

On the Mycobrain side, some changes were made to also make this firmware configurable so that it could be built for different sites and sensors without too much tweaking of the code.

Issues and Bugs