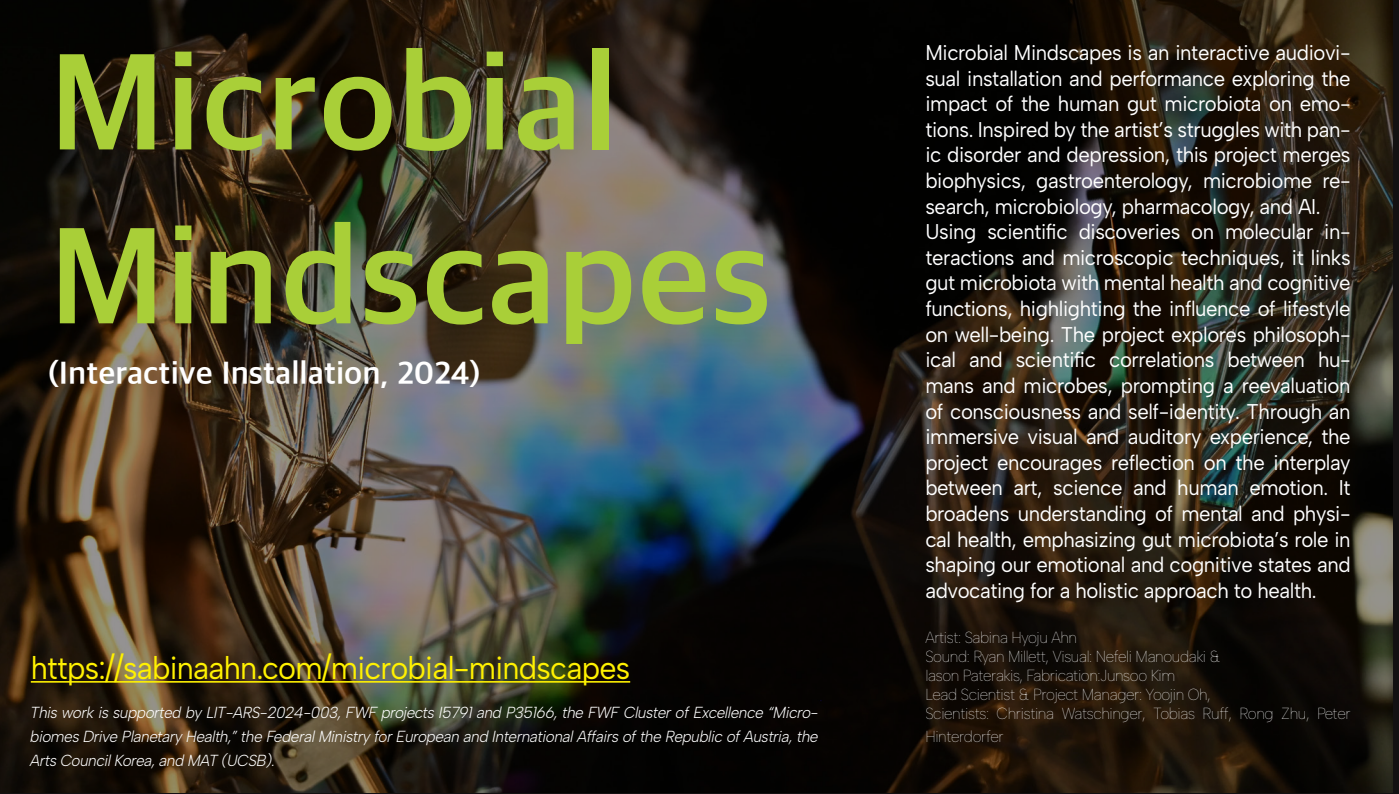




Microbial Mindscales

(Interactive Installation, 2024)

Microbial Mindscales is an interactive audiovisual installation and performance exploring the impact of the human gut microbiota on emotions. Inspired by the artist's struggles with panic disorder and depression, this project merges biophysics, gastroenterology, microbiome research, microbiology, pharmacology, and AI. Using scientific discoveries on molecular interactions and microscopic techniques, it links gut microbiota with mental health and cognitive functions, highlighting the influence of lifestyle on well-being. The project explores philosophical and scientific correlations between humans and microbes, prompting a reevaluation of consciousness and self-identity. Through an immersive visual and auditory experience, the project encourages reflection on the interplay between art, science and human emotion. It broadens understanding of mental and physical health, emphasizing gut microbiota's role in shaping our emotional and cognitive states and advocating for a holistic approach to health.

Artist: Sabina Hyoju Ahn

Sound: Ryan Millett, Visual: Nefeli Manoudaki &

Iason Paterakis, Fabrication: Junsoo Kim

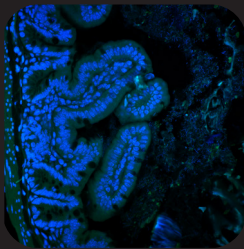
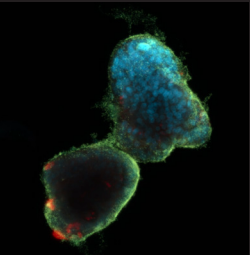
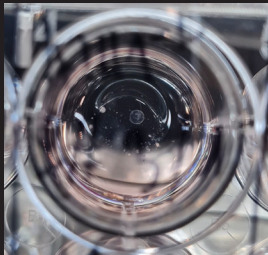
Lead Scientist & Project Manager: Yoojin Oh,

Scientists: Christina Watschinger, Tobias Ruff, Rong Zhu, Peter Hinterdorfer

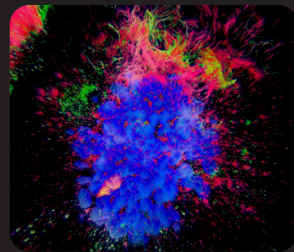
<https://sabinaahn.com/microbial-mindscales>

This work is supported by LIT-ARS-2024-003, FWF projects I5791 and P35166, the FWF Cluster of Excellence "Microbiomes Drive Planetary Health," the Federal Ministry for European and International Affairs of the Republic of Austria, the Arts Council Korea, and MAT (UCSB).

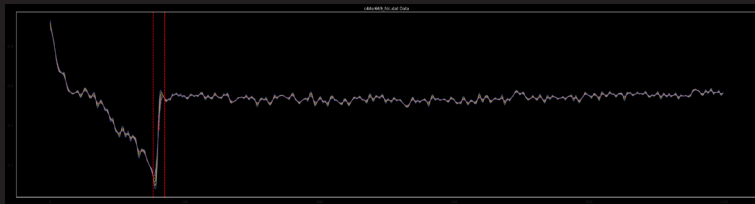
Data Visualization & Sonification



Colon Organoid Data



Real-Time Point Cloud & AI
Diffusion Data Visualisation



AFM & Immune Response Data



Multi channel Sonification (6.1 ch)

AI Integration

Neurotransmitter
-Food AI grading
system:
Interactive
AI-driven
biofeedback
using LLM

Input: Audience describes
their nutrition.

Analysis: AI analyzes the
food based on gut
microbiota diversity data.

Output: Visualization and
sound dynamically change
based on the assigned
score.

Prediction: The AI predicts
neurotransmitter production
and associated mood
changes.

Scoring: AI assigns a score
(1-10) based on its analysis.

```

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```

ANALYZING MENTAL STATE CORRELATIONS...

Estimated Levels of Mental States

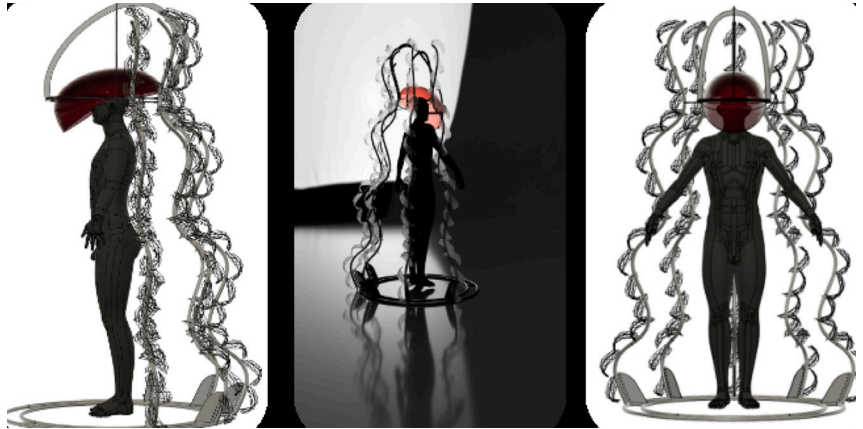
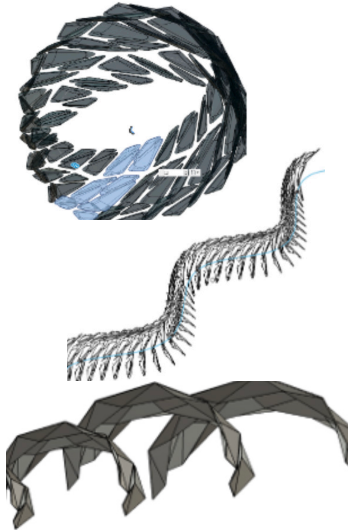
Mental State/Mood	Estimated Level (0 - 100)
Calmness	85
Anxiety	20
Focus	75
Mood Stability	80
Alertness	70
Impulsivity	30
Fatigue	25
Cognitive Clarity	80

GENERATE

Human Scale Interface (Artifact)

Iterative Design Approach

Organic Design and Modular Structure







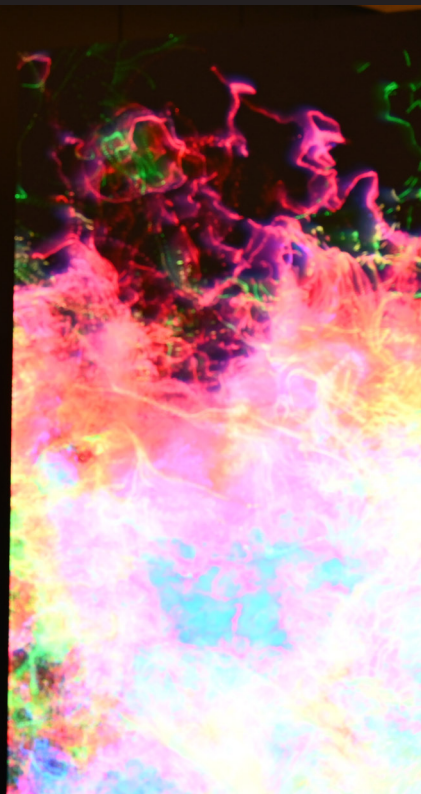
Interactive Interface

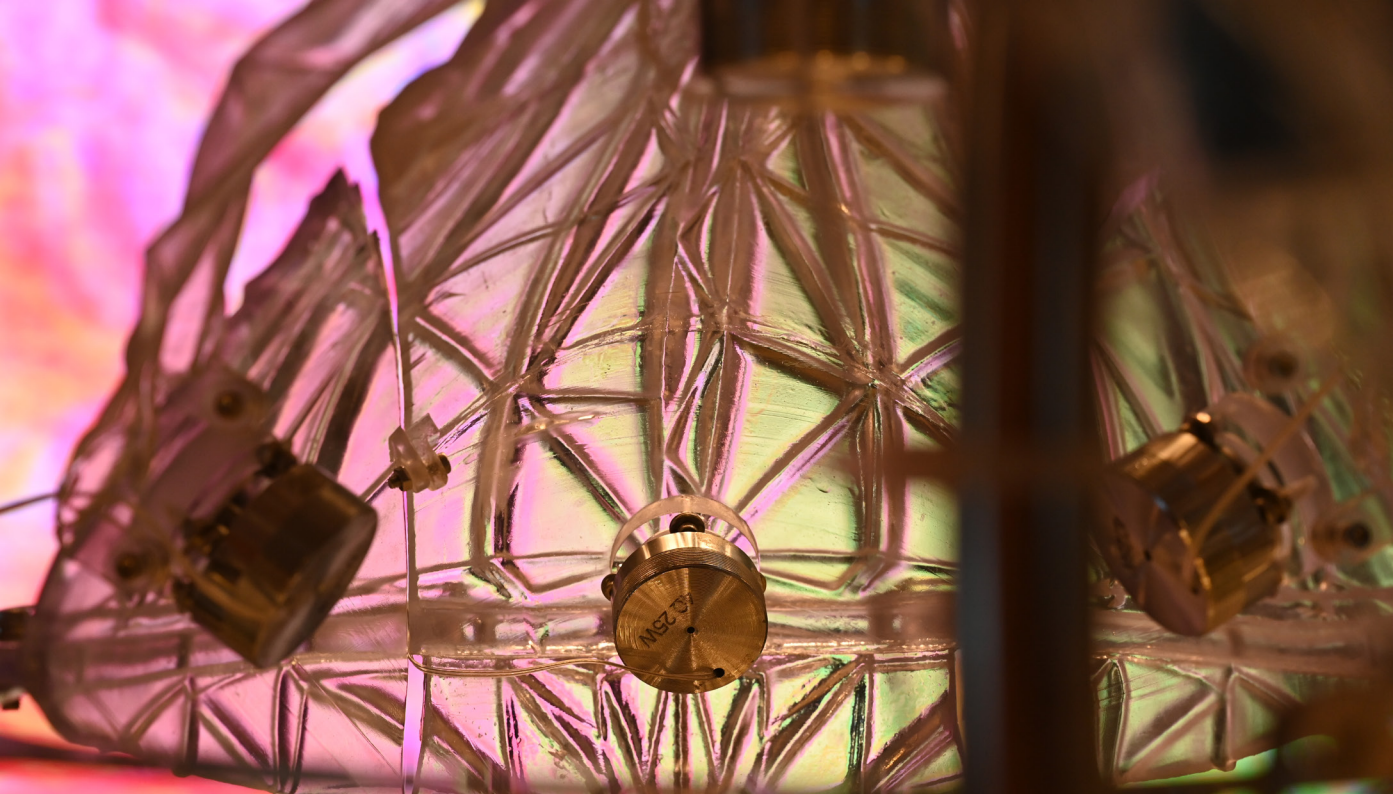
Voice interaction (LLM-based, supporting 50+ languages)













PlaSphere



(Immersive AudioVisual Installation, 2025)

<https://sabinaahn.com/plasphere>

Plastiglomerates are geological formations where plastic, rock, and organic matter fuse along coastlines, forming a new type of human imprint in the geological record. PlaSphere takes this fusion as both subject and compositional method, building sound and image through analogous processes of fragmentation and resynthesis. The work draws on field recordings collected on remote coastal islands as part of an earlier research project (Neural Tides, 2024). These sounds are fragmented, reorganized through neural networks, and spectrally fused into hybrid textures distributed across a multichannel array. In parallel, photographs of plastiglomerates collected on-site are used to train a custom LoRA model that generates photorealistic animations of speculative lifeforms—organisms modeled on species indigenous to the islands, such as crabs, urchins, and snails, whose bodies are composed of plastiglomerate material. These creatures are presented as holograms in wooden boxes distributed throughout the installation.

This iteration of the project is an collaboration under collective_nshp (Sabina Hyoju Ahn, Seyeon Park, and Ryan Millett).

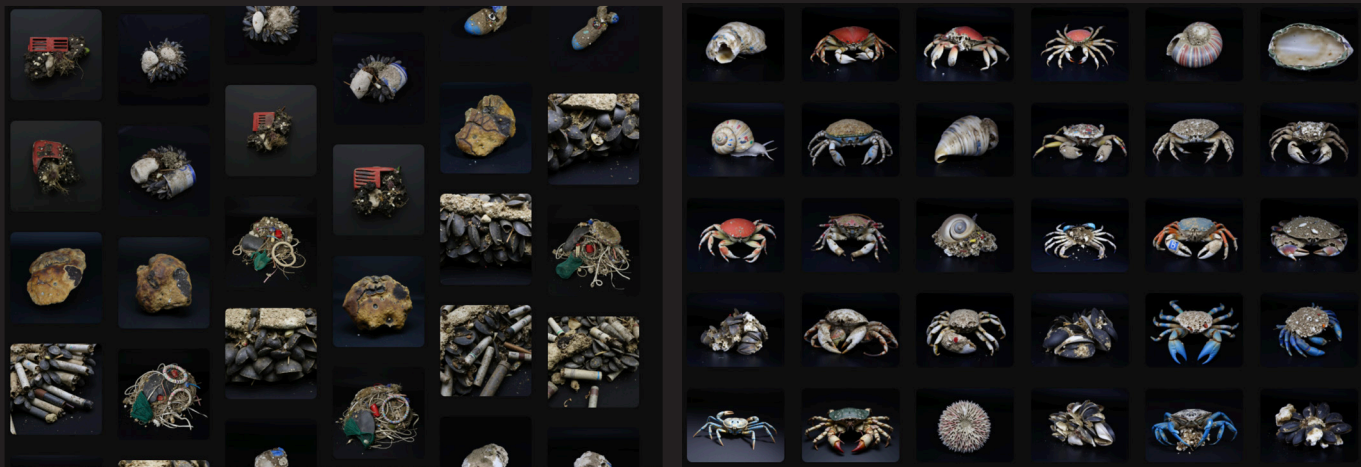
This project is supported by Art Lab Korea, and Peter Brill Foundation.

Plastiglomerates Collected on Hakrim Island



This project draws from a dataset of hundreds of plastiglomerate images collected on Hakrim Island. Photo by Seyoun Park.

Custom LoRA Training on Plastiglomerate Dataset



Using a dataset of plastiglomerate images collected on Hakrim Island, we trained a custom LoRA model to generate both realistic variations of plastiglomerates (right) and speculative hybrid organisms combining marine life and plastic debris (left).

Speculative(hybrid) plastiglomerated creatures

Still images were first generated and then extended into video sequences, all through prompt-based generation.





"Symbiosis or Schism? The AI-Human Odyssey."
Santa Barbara Community Workshop, SB, CA, USA
Oct 2-12, 2025

PlaSphere (solo)
Post Territory, Seoul, South Korea
Dec 17-23, 2025



PlaSphere (Solo)
Post Territory, Seoul, South Korea
Dec 17-23, 2025



Neural Tides

Oceanic Neural Granular Synthesizer
(Sound Instrument, 2024)

<https://sabinaahn.com/neural-tides>

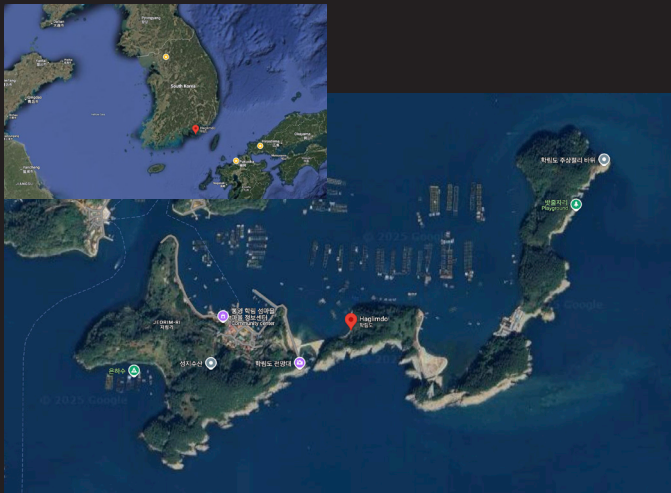
This project premiered at Sónar+D festival in 2024, sponsored by Ministry of Culture, Sports and Tourism, the Arts Management Support Center, and Arts Korea Lab.

<Neural Tides> is a multi-granular synthesizer that uses an artificial neural network trained with sound samples from the coastal areas of isolated islands—Hakrim-do and Ulleung-do—in South Korea. These islands have been mapped as sound particles within a latent space, enabling users to freely explore and listen to their coastal environments. The synthesis process mimics the natural degradation of styrofoam, blending nature with artificial elements to reflect the integration of marine debris into the natural world. We employed granular synthesis to illustrate how plastic breaks into small pieces by waves and wind, merging with natural materials on the coast. This process mirrors granular synthesis, where sound is divided into particles and new sounds are created by adjusting grain size. The instrument is designed for precise manipulation, allowing users to navigate the latent space and select sound particles. The custom interface is user-friendly, featuring six knobs, a motion sensor, and a touchpad for easy control, enabling users to navigate sound sources, adjust time segmentation, and add effects. The instrument's case has been 3D printed with algae-based filament, making it biodegradable. <Neural Tides> transforms the visual experience of the sea into an auditory one. Our aim is to promote environmental awareness in a lighthearted way with this playful instrument while also sharing and connecting our ideas with others.

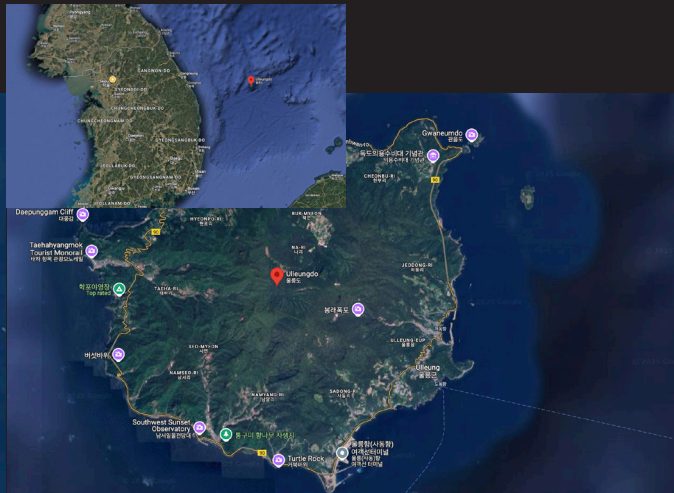
Sabina Hyoju Ahn, Seyeon Park, Ryan Millett
Project by collective_nshp



Data Collection Location: Hakrim-do, Ulleung-do (South Korea)



Hakrim-do, Tongyeong-si, Gyeongsangnam-do, South Korea



Ulleung-do, Tongyeong-si, Gyeongsangnam-do, South Korea

Data Analysis & Sound Synthesis

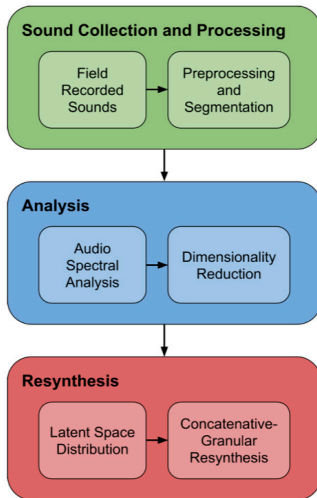
Audio processing pipeline: field recordings (7+ hours) → spectral analysis → dimensionality reduction → latent space mapping → granular resynthesis.



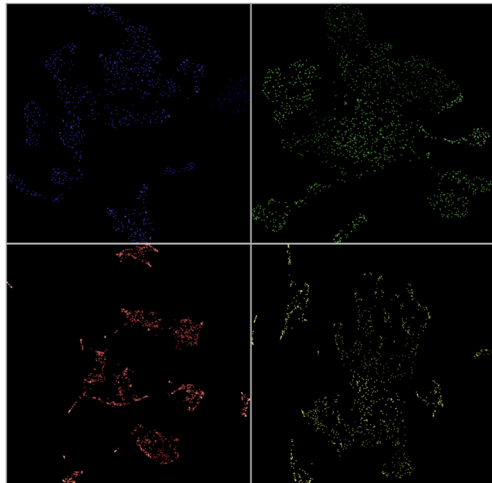
Recording sound samples at Hakrim-do, South Korea.



Plastiglomerate sample collection.

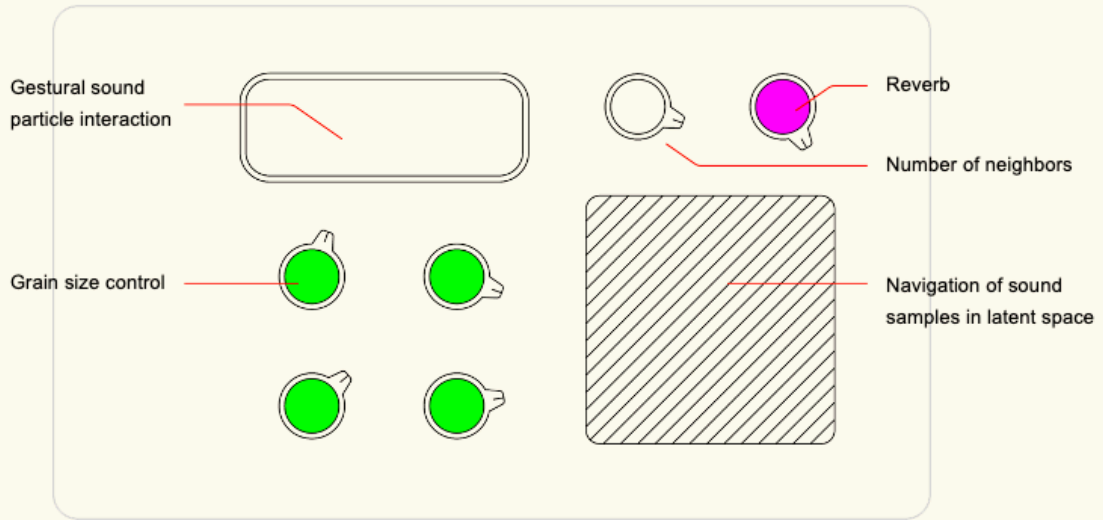


Data processing flow chart



Sound particles distributed in latent space (4 layers, 4 granular synthesis engines).

Software + Physical Instrument: Neural Tides Instrument Layout





Sonar +D, Barcelona, Spain (2024)





Gitex, Dubai, United Arab Emirates (2024)

95% Happiness



<https://sabinaahn.com/95percent-happiness>

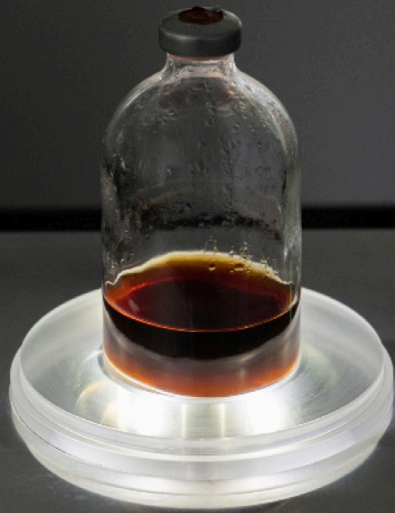
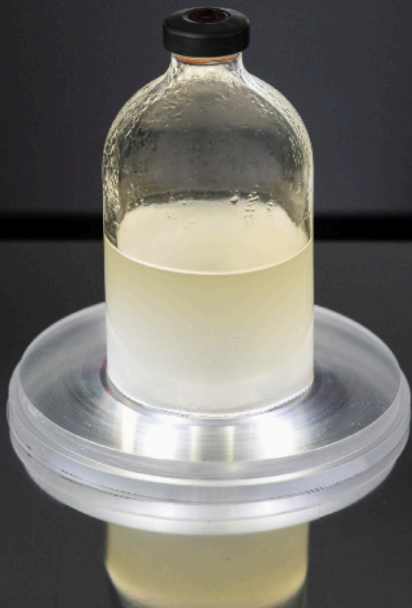
Artist, Concept, Production: Sabina Hyeju Ahn
Scientific Advisor: Dr. Doosang Park (KRIBB)
Graphic Design and Data Visualization: Philip Ryu
Editorial Design: Xianlu Yi
Videography: Rania Shine, Jong Heon Lee

Thanks to Dr. Songeun Baik, Sey Parc, Minsung Kim, Seungyeon Oh

This work is supported by Artience 2021, 2022 and Daejeon Culture and Arts Foundation (DCAF), Korea Research Institute of Bioscience and Biotechnology (KRIBB)

“95% Happiness” is an art project that explores the relationship between the gut microbiome, emotions, and mood, and uses the artist’s personal experiences to create a physical representation of happiness. The inspiration for this project came from the knowledge that certain gut bacteria are involved in cognitive and social functions, such as depression, autism, and schizophrenia. Some gut bacteria can produce neurotransmitters like serotonin and dopamine, which affect our mood. According to research, 95% of the body’s serotonin is produced in the gastrointestinal tract, which is why the gut is often referred to as “the second brain.” The artist has a personal connection to this topic, as she has been diagnosed with panic disorder and depression, and her health has deteriorated over the last three years due to irregular eating habits, a monotonous diet, and frequent moves between countries. Over the past two years, she has been working to improve her health and has been monitoring her gut microbiome status under various residential and dietary conditions. To her surprise, her data showed that her gut microbiome gradually became more balanced and diverse as she recovered from her psychiatric symptoms. In this work, the artist demonstrates the interplay between gut bacteria, personal emotions, and mood by analyzing her medical records and gut microbiome samples from Germany, South Korea, and the United States. She collected samples when she was in her healthiest state and cultivated the Bacteroidetes cluster in her gut microbiome, which is known for producing serotonin and promoting feelings of contentment, satisfaction, and emotional stability. Through her two-year collaboration with Dr. Park, the artist aims to represent her happiness in a bottle, calling it her “95% of happiness,” thus turning the abstract concept of happiness into a tangible form and sensory experience.

The artist's Bacteroidetes culture, cultivated in a jar, is associated with gut bacteria involved in serotonin production.



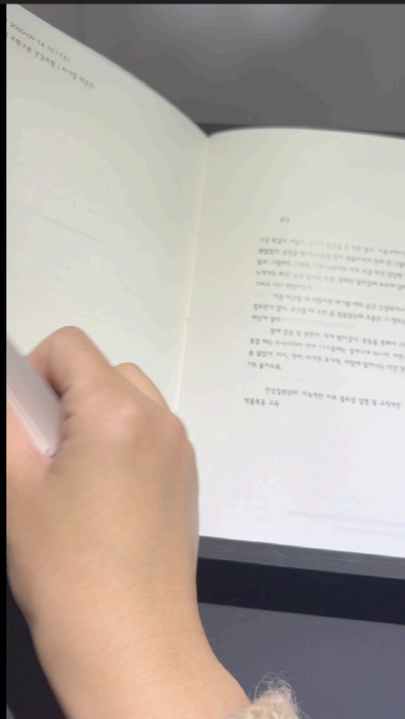
95% Happiness (Artience exhibition,) Deajeon, South Korea (2022)

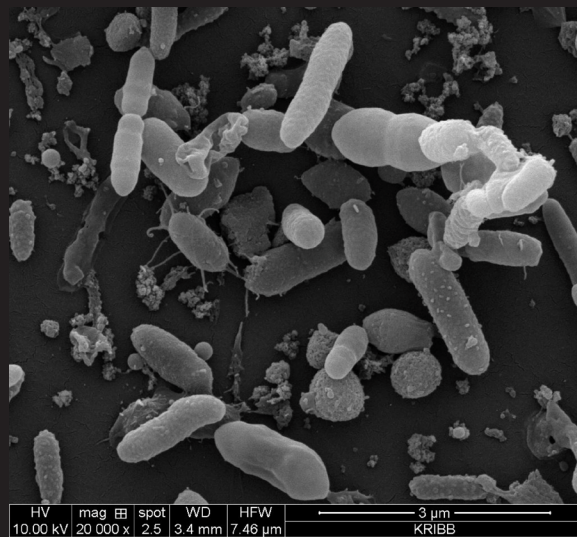
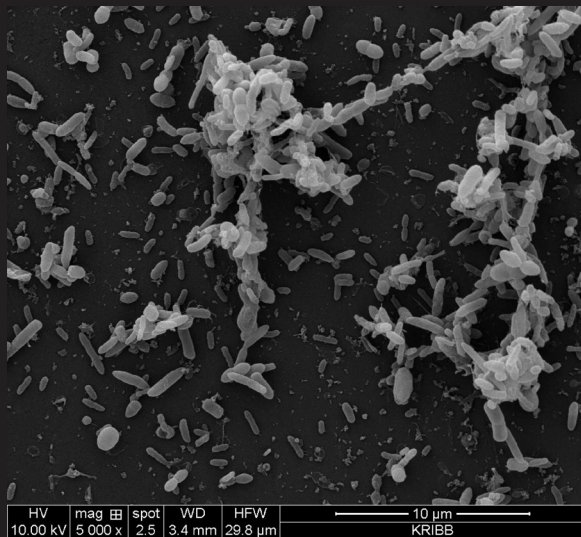
Next Generation Sequencing, (2019-2022)

[illegible]

Microbiome Changes and Psychiatric Symptom Records

A book documenting the relationship between microbiome changes and mental health improvements, based on three years of the artist's psychiatric records.





Electron microscopy images of the artist's gut microbiota.

Data Visualization

Intestinal sound is recorded with stethoscope when varying situations. After filtering the sound, it has been distributed into 4 channel tactile speakers (transducers) by attaching behind the screens.

Microbiome data visualization / 2ch
video installation based on the Mi-
crobiome data analysis 2021-2022.
Touchd designer by Philp Ryu.





95% Happiness (Artience exhibition,) Deajeon, South Korea (2022)

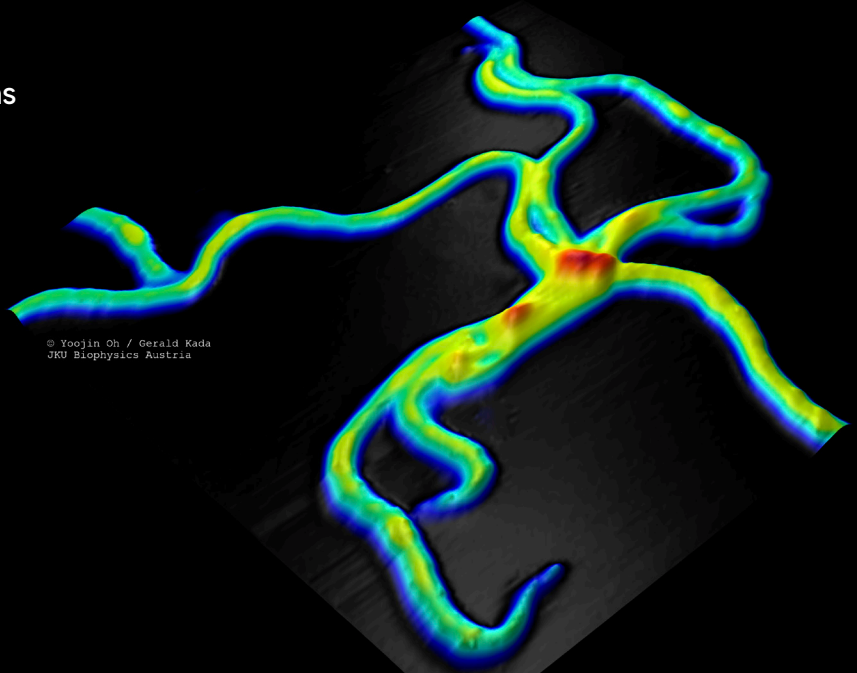
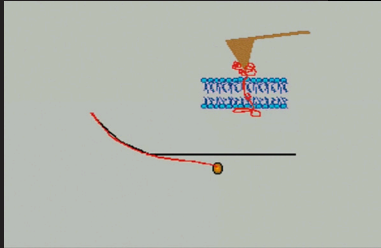
Signals

(Installation, 2021-2022)

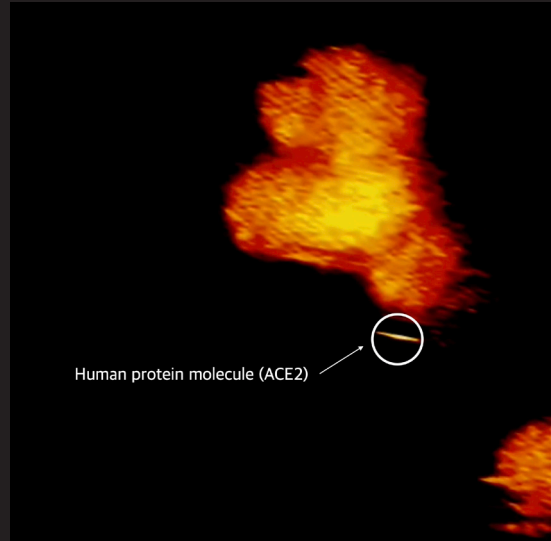
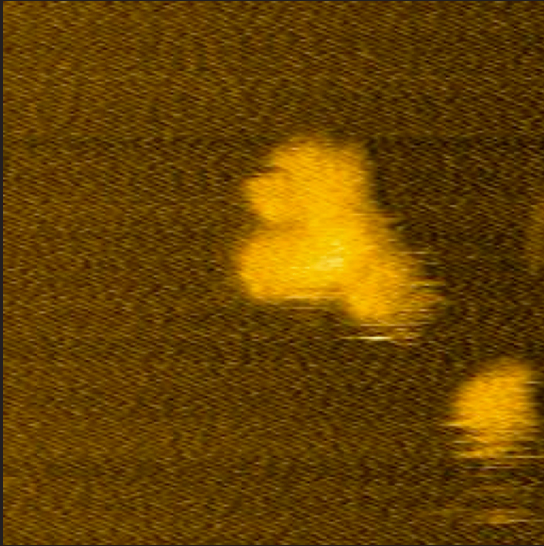
<https://sabinaahn.com/parasitic-signals>

1.12623
1.428595
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3.5897
2.243
2.5937
1.5566
0.7482903
1.7309563
60.53672862
parasitism
0.899467057
0.915676296
0.935357
0.93555
0.52194187
0.059744385/
0.627290207
0.44893308
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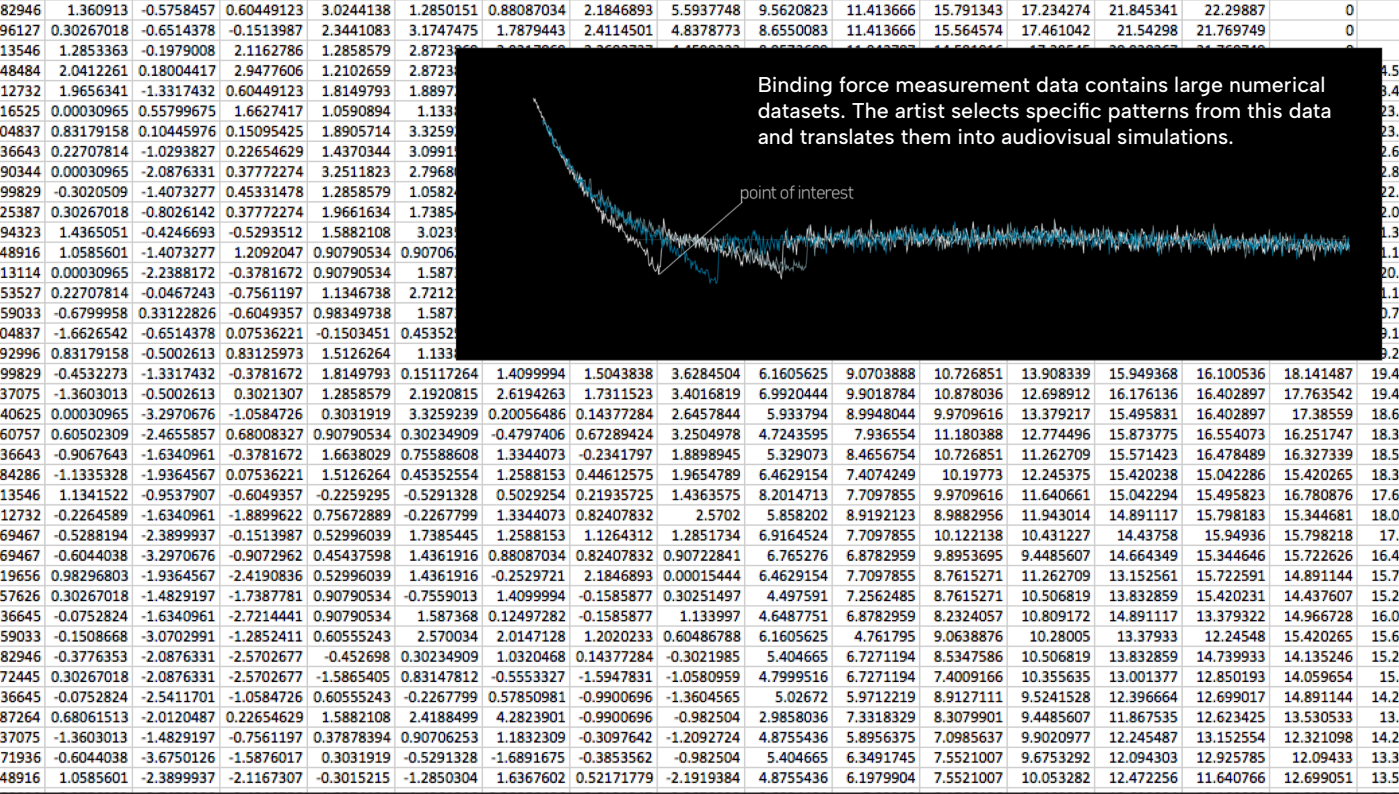
Atomic Force Microscopy (AFM) data measuring binding forces between pathogens (Borrelia bacteria and SARS-CoV-2 virus) and human protein molecules.

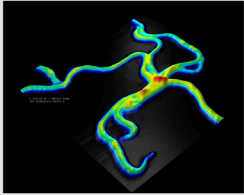


AFM images of Borrelia bacteria, showing binding interactions (left) and surface topology (right). Courtesy of JKU.

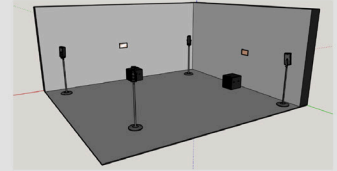
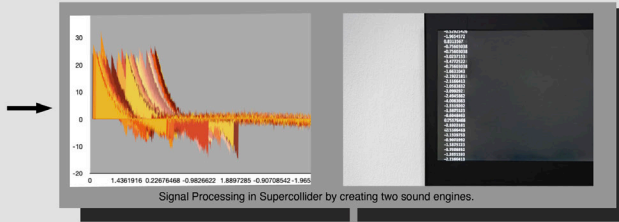


High-speed AFM image of the SARS-CoV-2 trimer structure during docking with human protein molecules. Courtesy of JKU.

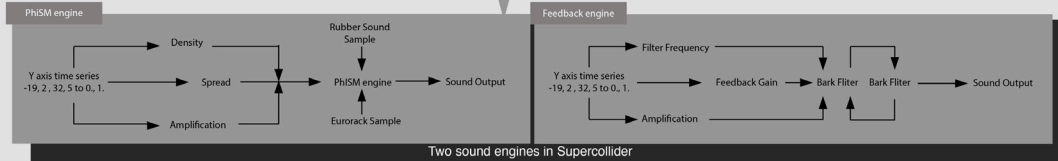


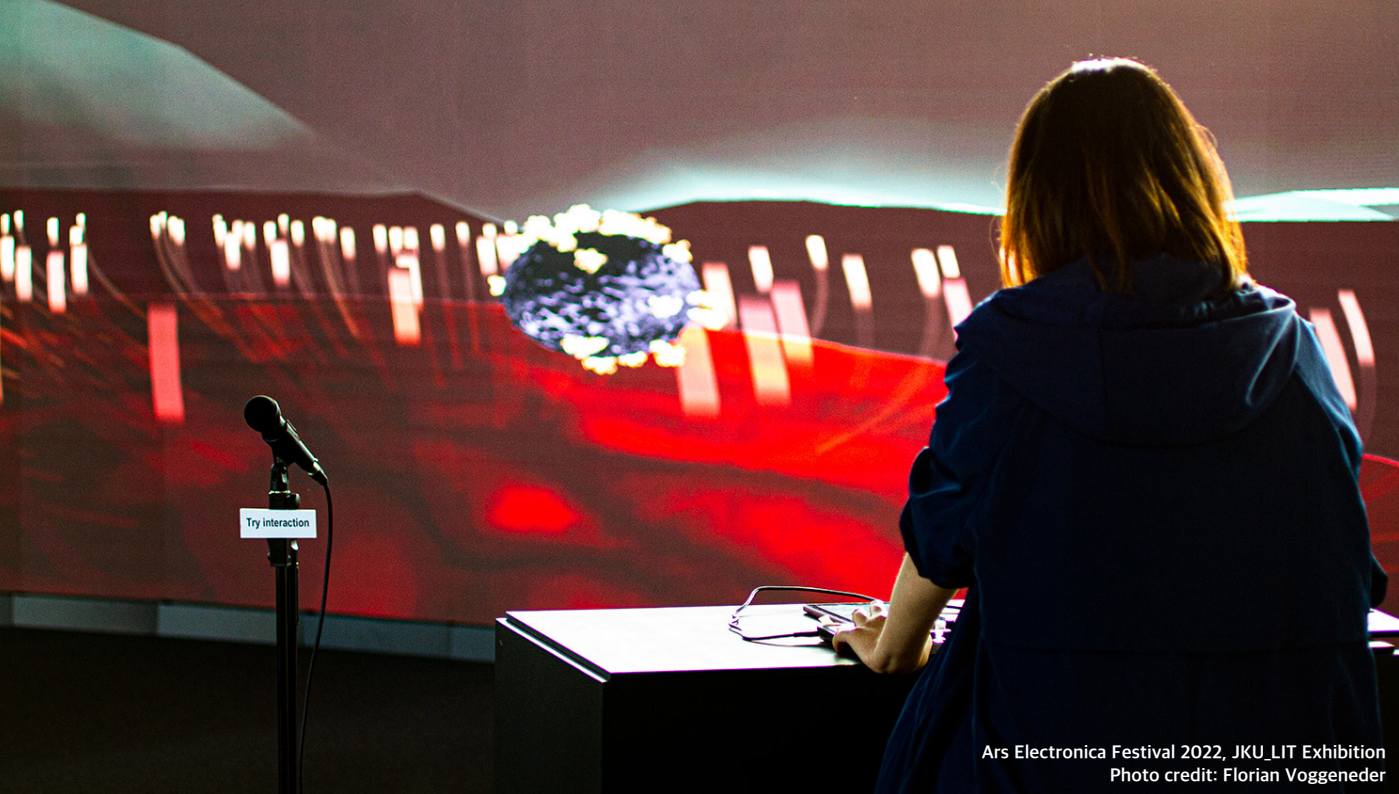


Borrelia burgdorferi topographical image obtained using AFM.
 -- A typical spirochetes morphology shape with unique corkscrew rotational movements are clearly shown in this AFM image.

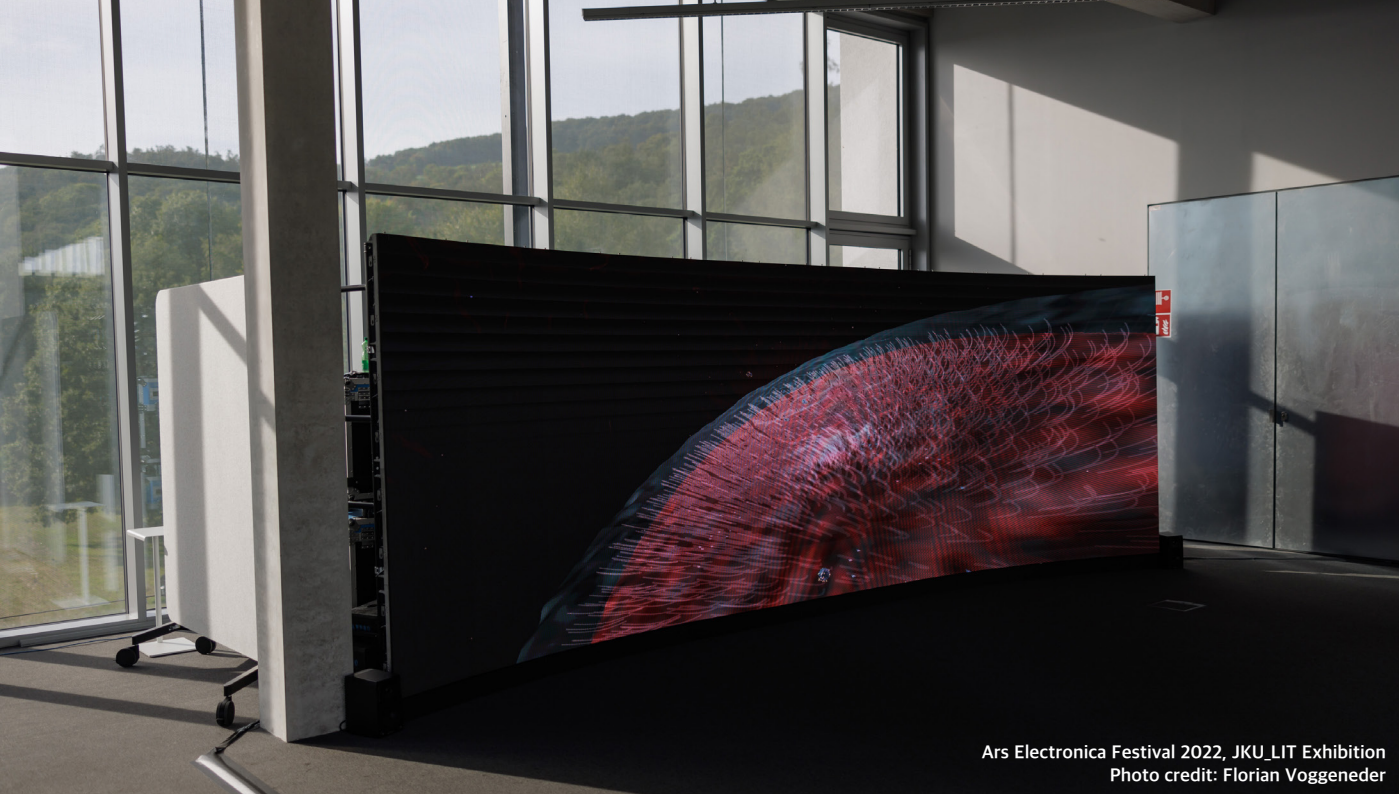


4.1ch sound distribution





Try Interaction



Ars Electronica Festival 2022, JKU_LIT Exhibition
Photo credit: Florian Voggeneder



Mutations exhibition (2021), Akademie
Schloss Solitude, Stuttgart, Germany



Under the Skin , 2022
Kunstverein Wolfsburg, DE

(Installation, 2017)

kHz is to explore the relationship between life and sound and explain how sound waves affect the microorganisms' environment. I use inaudible frequency as a physical phenomenon rather than an audible frequency. In this work, bioluminescent algae, "P.fu-siformis" visualize frequencies higher than 28kHz that cannot be perceived by human ears. When the frequency of inaudible sound penetrates through the bioluminescent algae, each cell visualizes the inaudible sound by glowing themselves. At the same time, the moment of shining also means the death of the cells. Because the ultrasonic waves travel through the water which contains the plankton and the frequency works like a sonic weapon, easily breaking the cells.

This project is funded by Asia Culture Center in Gwangju, South Korea.

<https://sabinaahn.com/khz-killerhertz>

More photos: <https://www.dropbox.com/sh/53ft0pn8r5sag2e/AACx-fqtHyQYgjaji2kCBNVcka?dl=0>

kHz (Killerhertz)







ACT Festival, 2017
Gwangju, KR

ACT Festival, 2017
Gwangju, KR



ACT Festival, 2017
Gwangju, KR

DIY BIONOISE

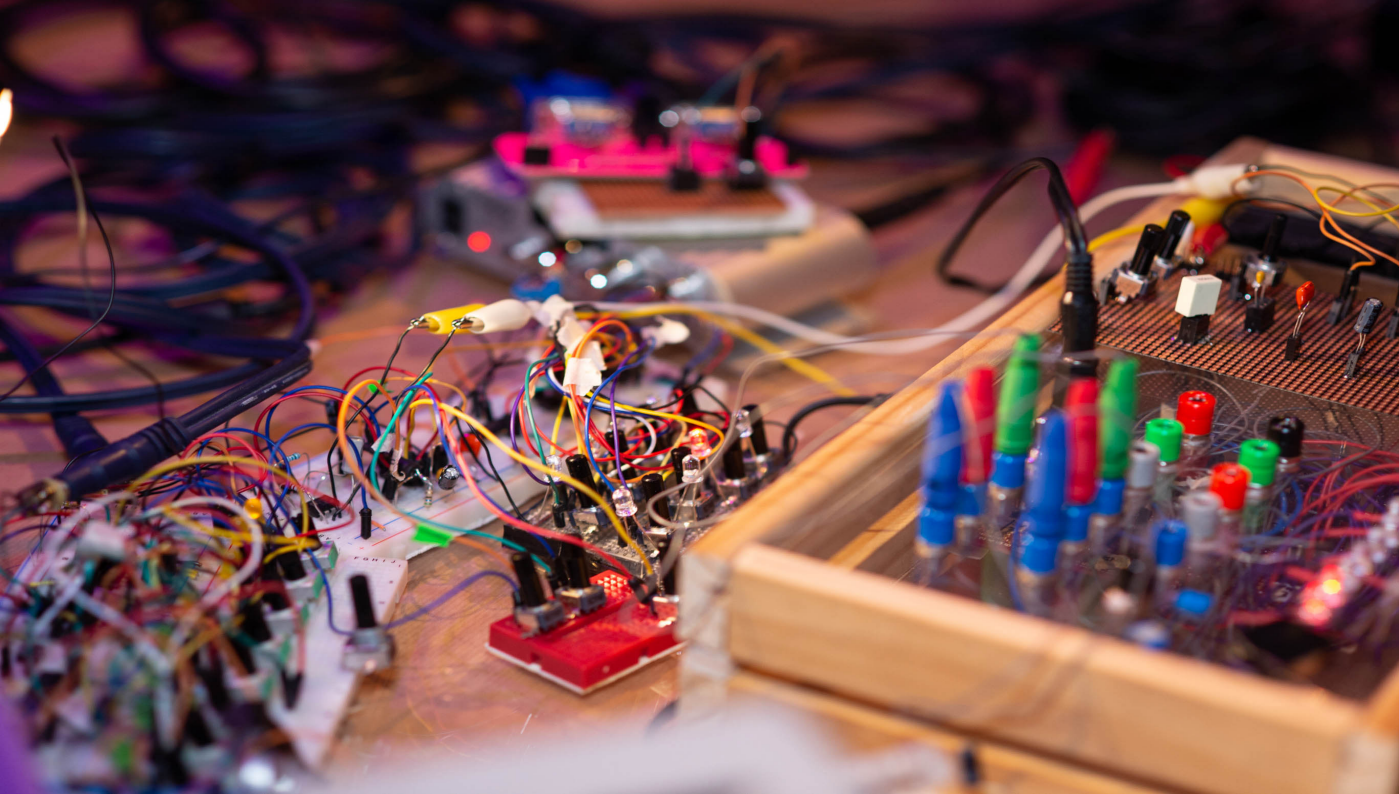
(Instrument & AV performance, 2018)

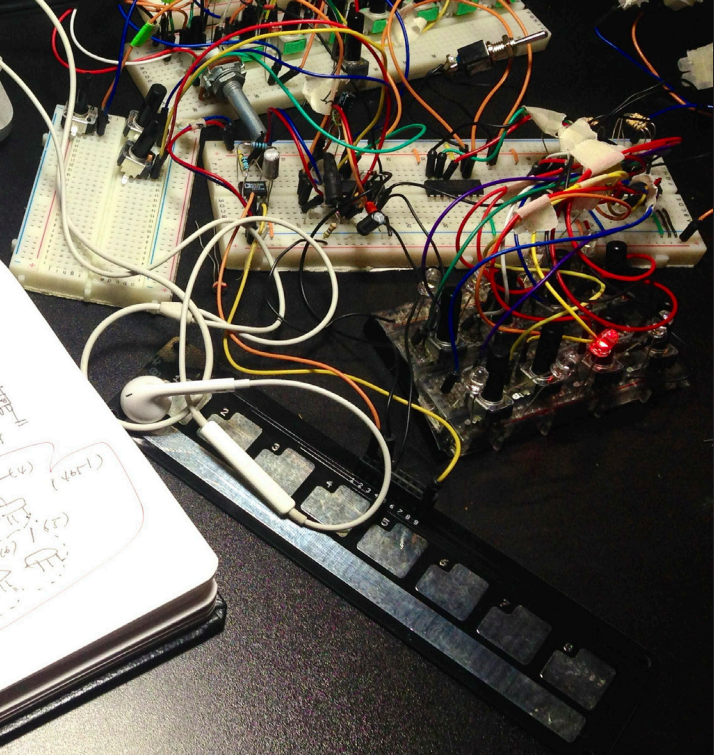
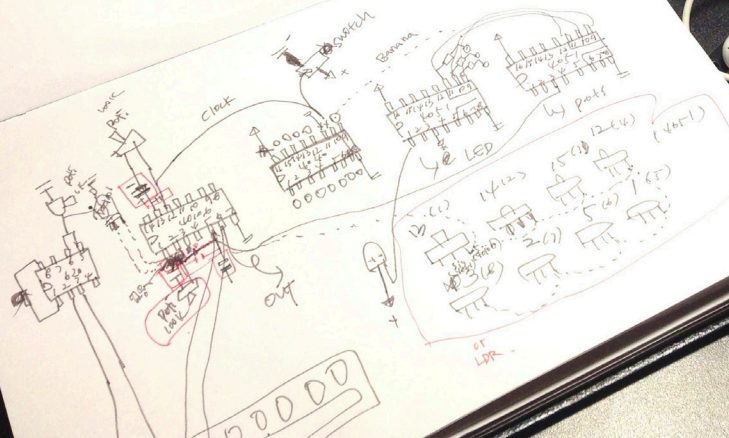
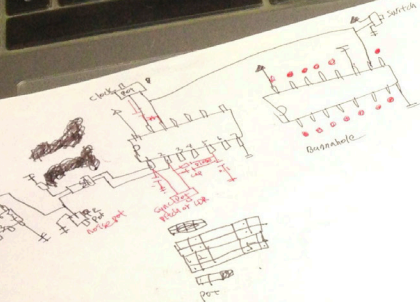
DIY Bionoise (2018) is an instrument in which the performer can generate sound and control noise, deriving from their own body. The instrument DIY Bionoise contains a circuit that can measure the bioelectricity from living beings to create bionoise which can be controlled by tactile sense (fingers). As a result, this instrument has two functions; a modular synthesizer with an eight-step sequencer and a bionoise controlled mode. DIY Bionoise is developed from my previous work "Sonomatter" which explored the transformation of bioelectrical energy from soil bacteria to sound. Its design has been based on electronic music devices like modular synthesizers and step sequencers as well as devices emerging from the DIY culture. The instrument can easily be customised by changing electronic parts with different values such as capacitors and sensors. And it creates systems to a musical instrument and adding a tactile element to interact with bioelectricity from the human body.

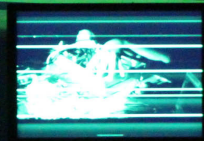
This work is supported by Nabi Art Center in Seoul, South Korea and V2_ Lab for the Unstable Media in Rotterdam, Netherlands.

<https://sabinaahn.com/diy-bionoise>











Sonomatter

(Installation and Performance, 2017)

<https://sabinaahn.com/sonomatter>

This project is funded by Seoul Metropolitan Government, Seoul Foundation for Arts and Culture, Munllae Arts Plus, 2017

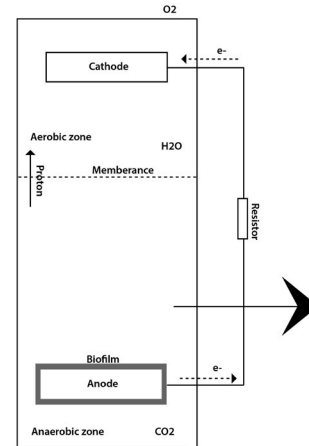
Sonomatter (2017) is a sound installation and performance that transforms the bioelectrical signal from microorganisms to sound. The work starts with building a Winogradsky Column, making a small ecosystem with mud and water -- generating the electric signal with a Microbial Fuel Cell (MFC), and measuring voltage from microorganisms that are formed in mud. As time proceeds, the microbes will create electricity and eventually die when they lack nutrients. The designed "Bioelectricity- Controlled-Oscillator" circuit consumes the (bioelectrical) energy to control the sound of the oscillator. This process illustrates a circular relationship between life and death, as life and death share the same material (mud). Interaction between organic matter and natural phenomena -- such as soil, water, respiration and oxidation, symbiotic relationship in a microcosm -- imply poetics in the microbial sphere. The project is thus not only a metaphorical exploration of the interaction between living matter and natural phenomena, but it also explores the domain of energy harvesting and generating clean energy. The audience is invited to experience the sound from real-time microbial data with handmade "Bioelectricity-controlled-oscillator" circuits.

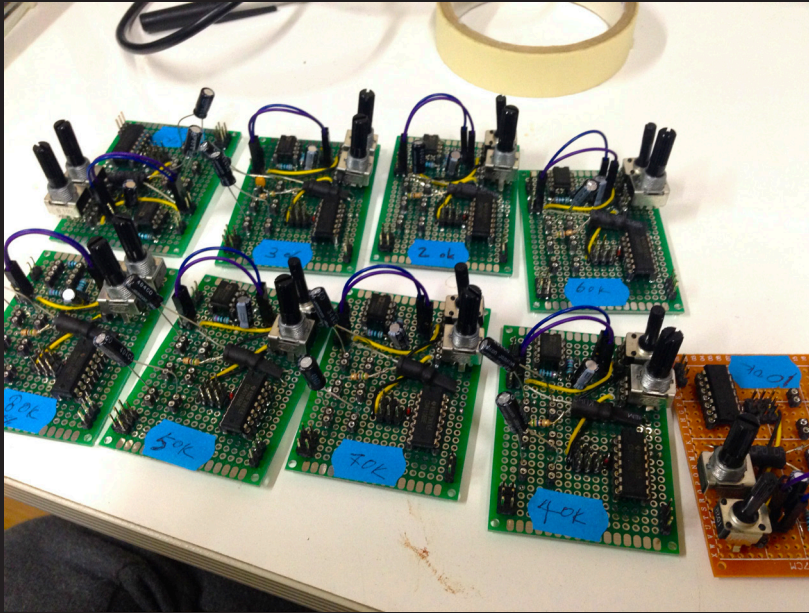
Concept, Technology, Sound, Production: Sabina Hyoju Ahn
Sound engineer & Technical assistant: Stefan Tiefengraber
Video production: Rania Shin
Photographer: Sey Parc
Material design: Minsung Kim
Advisor: Dey Kim, Byungkwon Kim, Lex van den Broek



Winogradsky Column + Microbial Fuel Cell (MFC)

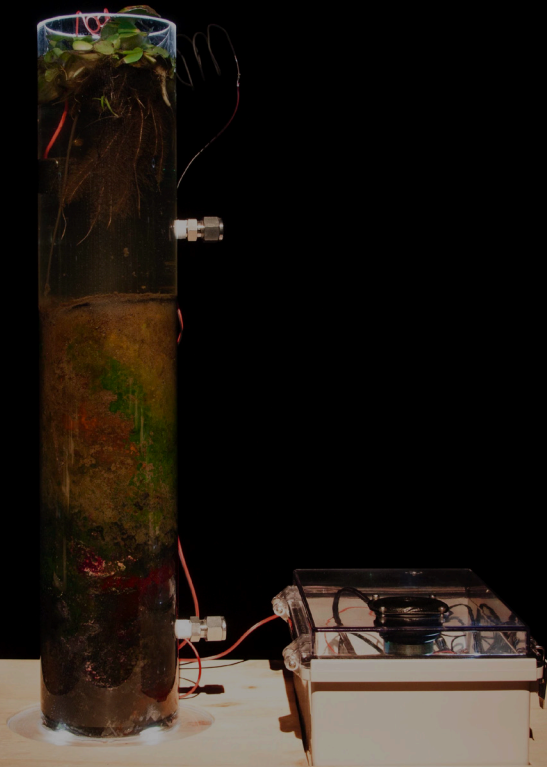
1. Build a Winogradsky column using pond mud, water, and nutrients.
2. Insert an anode (-) into the mud and a cathode (+) into the water to create a microbial fuel cell.
3. After 1–3 months, distinct bacterial layers emerge, generating measurable voltage.



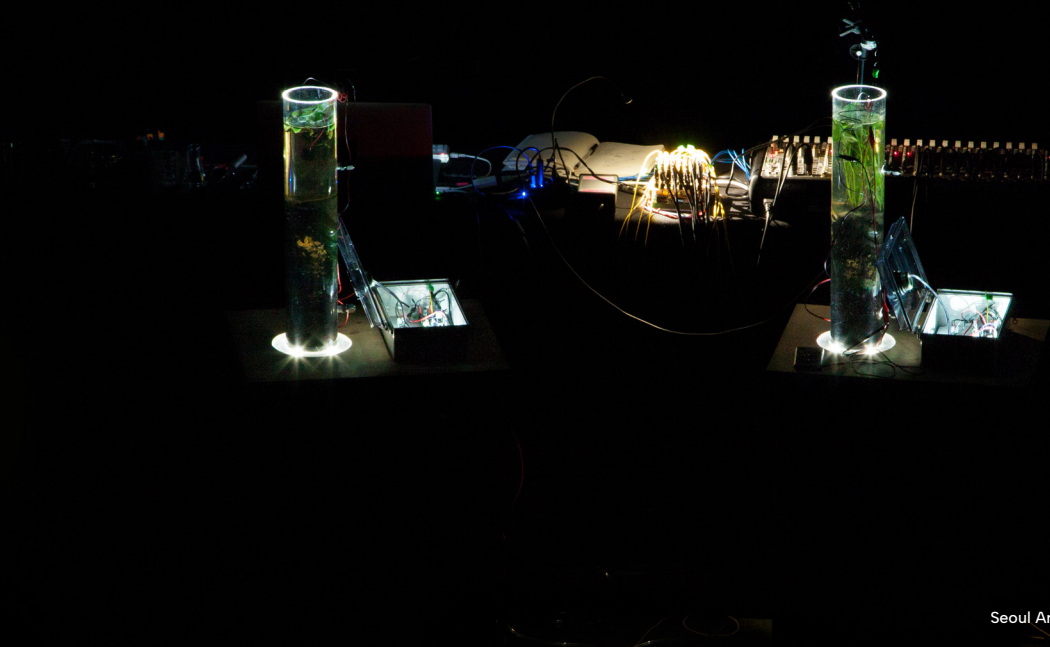


Bioelectricity- Controlled- Oscillator (BCO)

Each column is connected to a custom-built BCO circuit, where variations in voltage modulate sound. Over time, the sound gradually slows down.

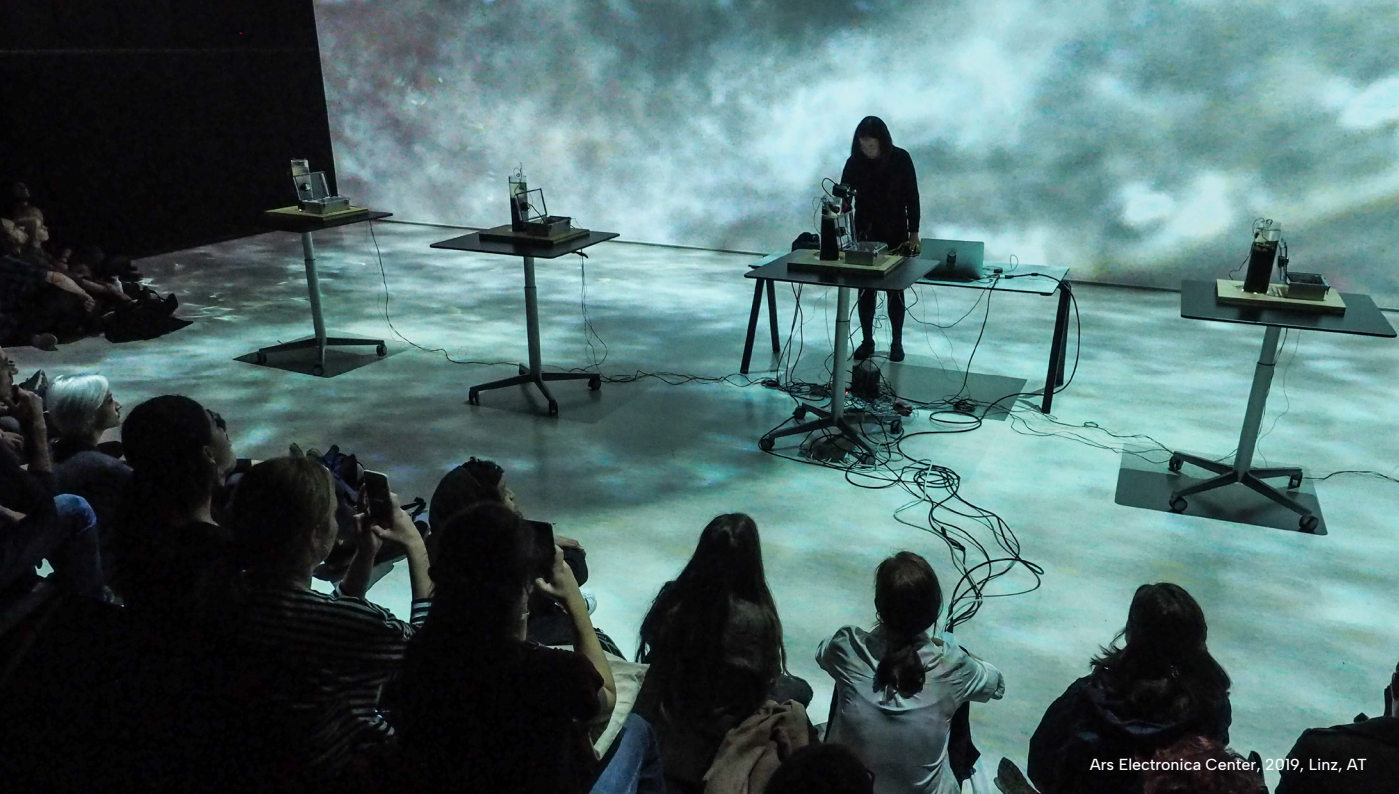














WRO Media Art Biennale (WRO), 2019, Wrocław, Poland

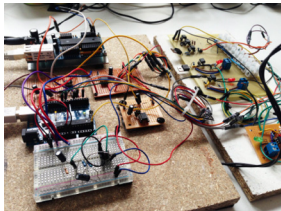


Breath

(Installation and Performance, 2015)

Breath is an interactive light and sound installation/performance, operated by human breath. As a wind instrument, this work has been developed to control sound and light with human breathing, made of DIY circuits and e-wastes. Breath uses amorphous energy from the human body and transforms it into different shapes: breathe to light and sound, vitalising an inorganic object. Human respiration is visualised by dimming bulbs, activates the machine and involves functioning. The piece has been made of electronic junks such as old telephone's microphone and old PC's metal frame to illustrate new life from the dead devices and to allude a transformable relationship between human and machine.

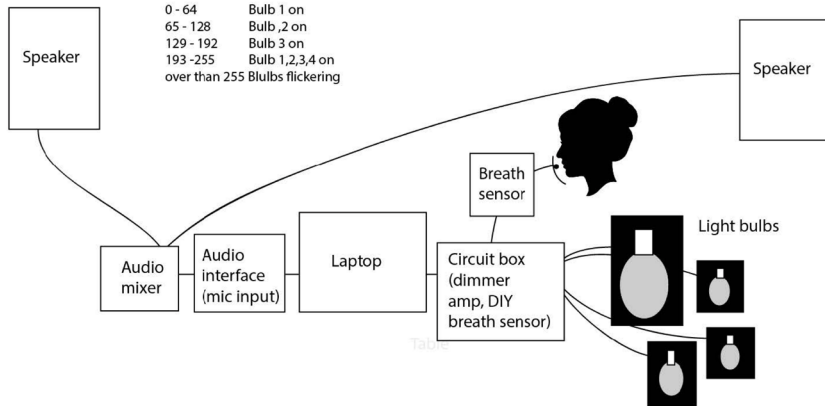
<https://sabinaahn.com/breath>



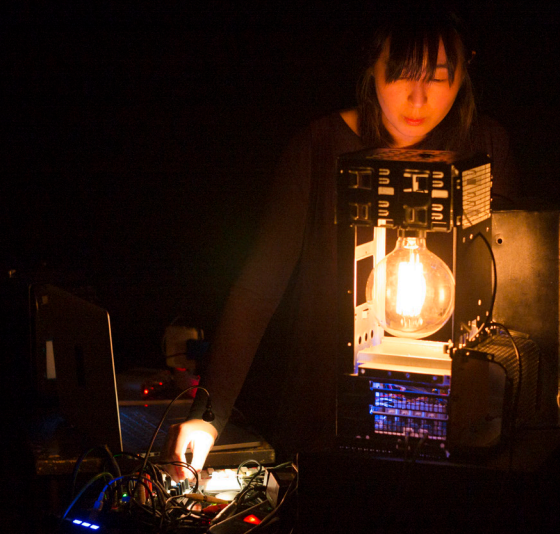
Breath Performance

Breath intensity

0 - 64	Bulb 1 on
65 - 128	Bulb ,2 on
129 - 192	Bulb 3 on
193 -255	Bulb 1,2,3,4 on
over than 255	Blulbs flickering

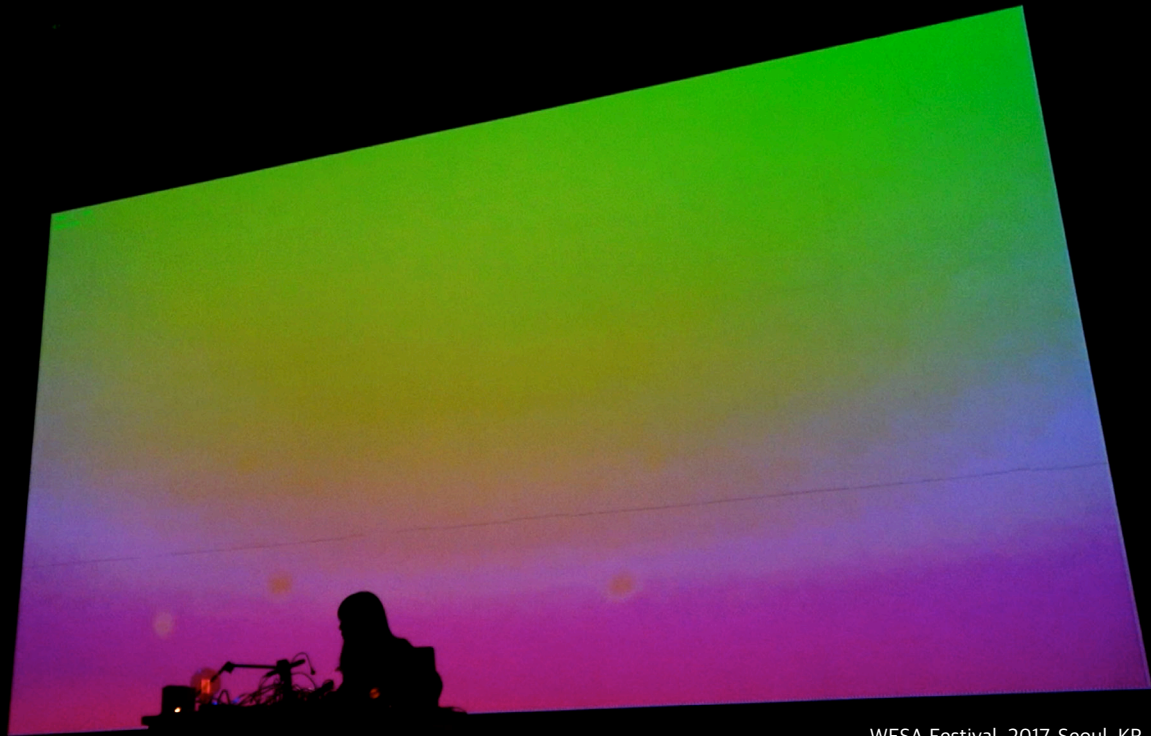


Constructed from salvaged electronic waste and custom-built circuitry, the system translates breath intensity into real-time control of light and sound.





Transmediale Vorspiel/CTM Festivall (Spektrum), 2017, Berlin, DE



WESA Festival, 2017, Seoul, KR