



DESIGNERS & ARTISTS  
**4** GENOMICS AWARD  
2011-2012



Wim van Eck  
and  
Netherlands Toxicogenomics Centre





Wim van Eck

## Netherlands Toxicogenomics Center

Toxicogenetics (LUMC)

-Leon Mullenders

-Albert Pastink

Toxicogenomics (Maastricht University)

-Jos Kleinjans

-René Reijnders

Toxicology (LACDR, Leiden University)

-Bob van de Water

-Leo Price



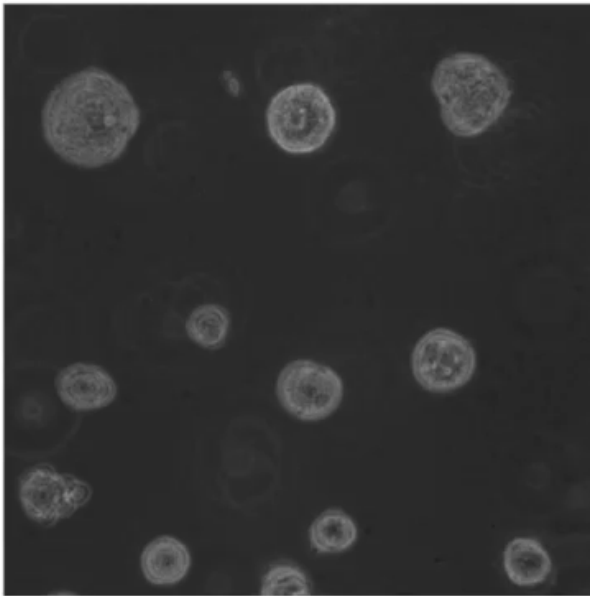
## Summary (part 1)

We propose to create an installation where visitors can explore digital virtual environments, which are derived in real-time from the microscopically observed live division of cells.

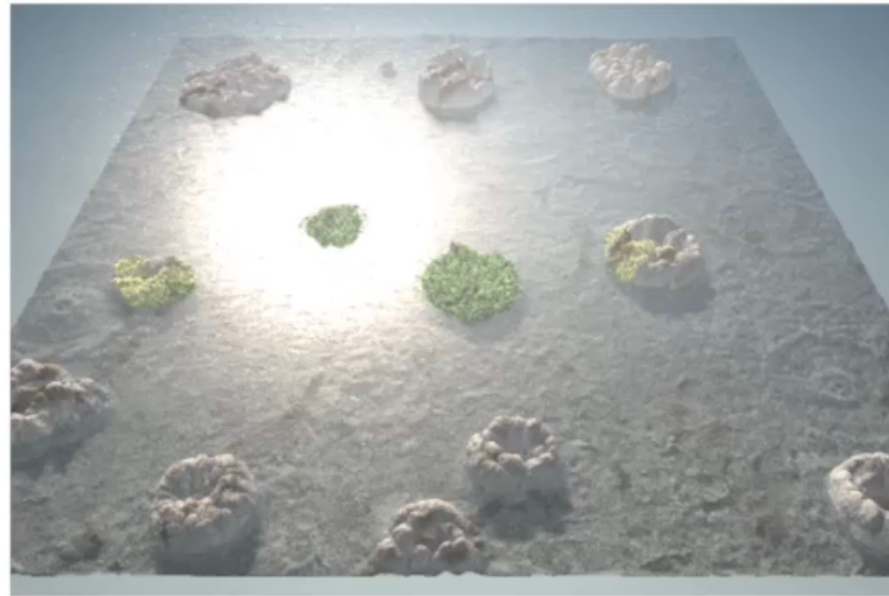
The visitor may choose to illuminate the cells with DNA- damaging UV-light, which triggers the growth of more varied and dynamic environments: but in doing so the visitor's hands will also be bathed in UV-light, thus posing a dilemma which represents daily-life decisions on toxic risks.



Microscopic footage of cells



Overview of generated landscape (mock-up)





## Summary (part 2)

We propose to create an installation where visitors can explore digital virtual environments, which are derived in real-time from the microscopically observed live division of cells.

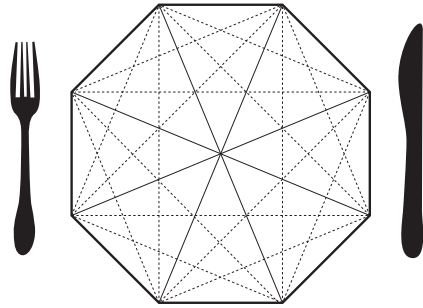
The visitor may choose to illuminate the cells with DNA- damaging UV-light, which triggers the growth of more varied and dynamic environments: but in doing so the visitor's hands will also be bathed in UV-light, thus posing a dilemma which represents daily-life decisions on toxic risks.



Zack Denfeld, Cathrine Kramer & Yashas Shetty  
and  
Netherlands Consortium for Healthy Ageing







**EDIBLE TIME MACHINE:**  
AGEING & EATING IN THE ANTHROPOCENE

*Previous food events*





THE CENTER *for*  
**GENOMIC  
GASTRONOMY**





ArtScienceBangalore







## **GETTING OLD TOGETHER STUDY**

PROF. DR. P. ELINE SLAGBOOM

PROF. DR. IR. EDITH FESKENS

DR. ONDINE VAN DE REST

DR. ANNETTE DE DEUGD





## THE GLOBAL MENU EVERYONE WANTS MORE TO EAT—AND THAT FOOD TRAVELS A LONG WAY TO GET FROM FARM TO TABLE.

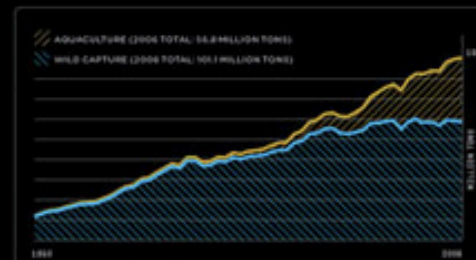
### Food From Afar

Attention, Iowa shoppers: If you eat standard supermarket produce, figure an average transport distance of 1,500 miles (and that's just for stuff grown in the US). Such is the price you pay in cash and carbon emissions—not to mention the tax dollars spent on repairing highways chewed up by behemoth trucks. In general, a longer, more global supply chain is also vulnerable to strikes, gas hikes, political turmoil, and contamination. All so you can eat what you want when you want it. —Ben Paynter



**Whole wheat bread** 0.0004  
**Canned spinach** 12.04  
**Great northern beans** 2.0001  
**Powdered skim milk** 0.01  
**Potato flakes** 0.01  
**Tomato paste** 0.01  
**Nondairy cheese** 0.01  
**Raw carrots** 0.01  
**Seedless raisins** 0.01  
**Vegetable oil** 0.0101

**INSIDE NUTRALOAF**  
Could science build a completely nutritious space food? Sure, but it'd be a lot like neutraloaf, a substance served to prisoners in solitary in some states. It's so unpalatable that it's the subject of several lawsuits. The ingredients (at left) are ordinary enough, and Vermont's version of the recipe (this makes three 1,000-calorie loafs) is balanced for fat, protein, carbs, and vitamins. So how could such a harmony of food and science constitute cruel and unusual punishment? Because it tastes like cardboard, smells like rotten eggs, and looks like baked vomit. —THOMAS HAYDEN



### The Rise of Aquaculture

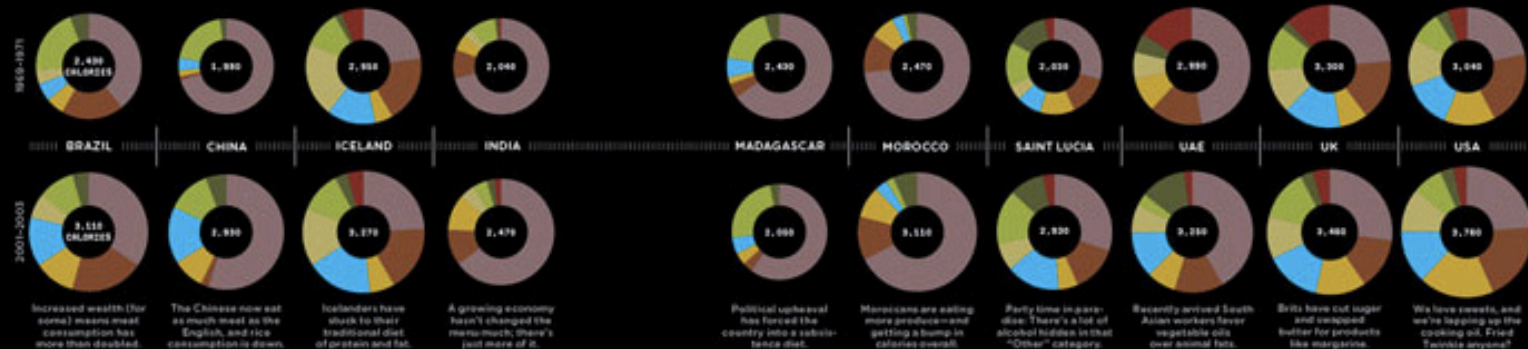
As humans worldwide consume more fish, wild-caught supplies cannot keep pace. That's where aquaculture—a factory farm approach to fish raising—comes in. But it's not all good: Fish farms pollute surrounding waters and cause disproportionate ecological damage. —T.H.

### WHO'S EATING WHAT? MOST COUNTRIES ARE CONSUMING MORE FOOD; OTHERS SHOULD CUT BACK.



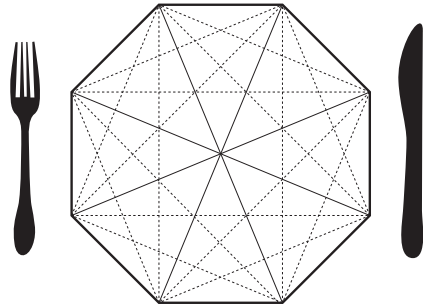
Once-hungry nations now have more to eat: In these 10 countries, selected from different regions and levels of economic development, almost everyone is eating better, increasing their intake of energy-dense (if energy-intensive) meat and dairy. But while developed, satiated nations like the UK consume only a little more per capita per day than they did 50 years ago, Americans have bumped up calorie intake by a pligish 24 percent, increasing global demand and making food that much more expensive for others. —B.P.

● CEREALS  
● VEGETABLE OILS  
● MEAT  
● SUGAR & SWEETENERS  
● MILK & PRODUCTS  
● ANIMAL FATS  
● OTHER  
● FRUITS/VEGETABLES



\*OTHER INCLUDES SODA, ALCOHOL, STARCHY ROOTS, AND OIL SEED CROPS. NOTE: FIGURES SHOW FOOD AVAILABILITY HIGHWAY INCLUDE HOUSEHOLD WASTAGE.





**EDIBLE TIME MACHINE:**  
AGEING & EATING IN THE ANTHROPOCENE

*Previous food events*





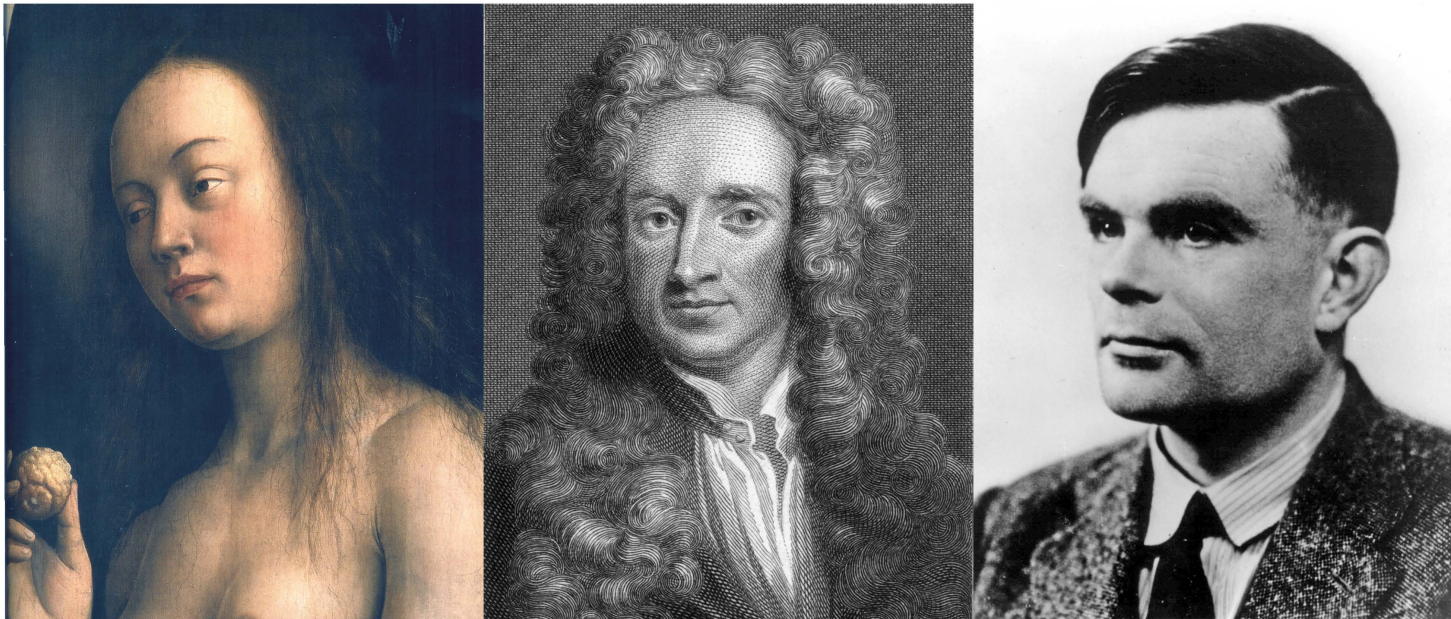
Charlotte Jarvis  
and  
Netherlands Proteomics Centre





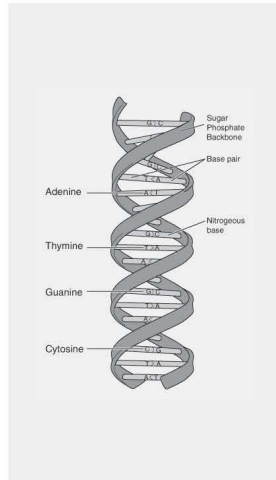
## Blighted by Kenning

Apples infected with knowledge - Appels besmet door kennis



Eve, Newton, Turing





GCTCGTACTATTTGTTTAGAAAGA  
ATAAATGAAAATTATTAAGACAT  
GGGATGGCTAATAGAAATGAAATT  
AATGGTTCTAGAGCTCGTGAAAGA  
AATATACGTAATAGATTCGTGAA  
GAAGCTAATGATAGAGAACAAGGG  
GCTTTAGAACTCATGAATATAGAG  
CTCGTGAAAGAGAAAATGATATAT  
GGGAAGATAGATGGATTACTCATA  
GACGTGAAGCTTCTATAATAGAG  
CTAATGATAGATGTATAAATTCTTGT  
ATTGAAAATTGTGAAAGAGCTAATG  
ATAGATCTCATATAGGGTTAGATAGA  
GCTTGACTAGAATATATGGGCTCGT  
GATTCTAGAATAAATGAAAGAGCTAA  
TATAACTCATGAACGTAGAATTA  
ATAGAGCTAGATCTCCTATTCGTAT  
TACTAGAATATTAGAAATCGTATA  
ACTCATGAACGTCATATAATAGAT

#### ARTICLE ONE

All human beings are born free  
and equal in dignity and rights.  
They are endowed with reason  
and conscience and should act  
towards one another in a spirit  
of brotherhood

Apples infected with knowledge





DESIGNERS & ARTISTS  
4 GENOMICS AWARD



**Blighted by Kenning**  
a project designed by Charlotte Jarvis

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Dear Professor [REDACTED]

We are thrilled that the [REDACTED] Genomics Institute is taking part in Blighted by Kenning.

Please find enclosed forbidden fruit.

The apple within has been contaminated by knowledge. It has been infected with a bio engineered fungus that has a message encoded into its DNA.

As discussed on the phone, we have included the appropriate DNA primers to assist in the the sequencing of the DNA and in the translation of the text. The cypher we have used is loosely based upon the normal amino acid code.

We look forward to receiving your translation and we invite you to eat the fruit. If you should so choose, please document your consumption.

Best Wishes,

Charlotte Jarvis and Netherlands Proteomics Centre

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Netherlands Proteomics Centre, Padualaan 8, 3584 CH Utrecht  
t + 31 30 253 4364, f + 31 30 253 6918, da4g@npc.genomics.nl  
[www.netherlandsproteomicscentre.nl/da4g](http://www.netherlandsproteomicscentre.nl/da4g)

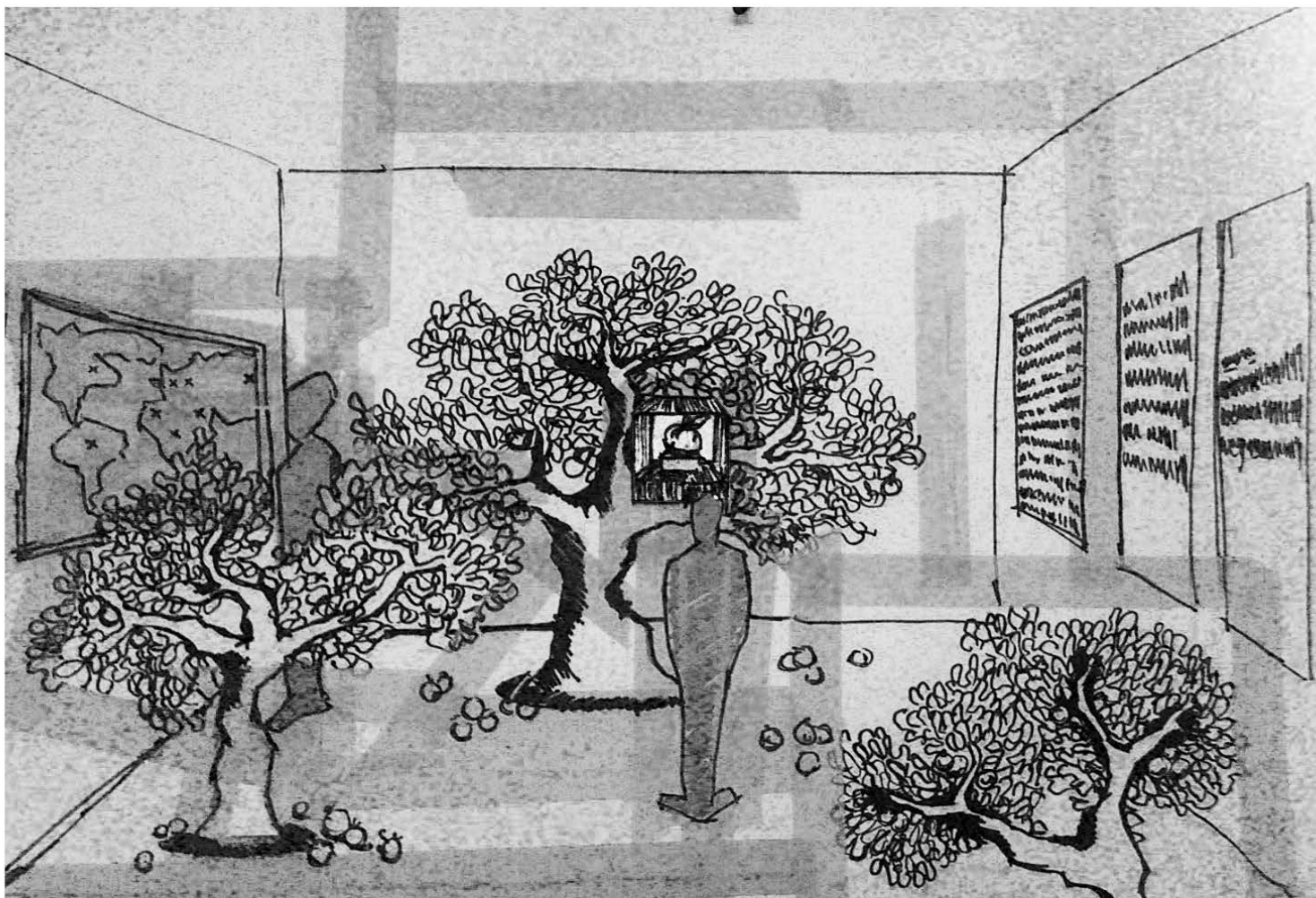
Projected letter to participating proteomics centres





Imagined documentation from participating genomics centres who decide to eat the forbidden fruit  
Please view 3minute film at <http://vimeo.com/32074598>





Installation plan



Tiddo Bakker  
and  
Centre for Biosystems Genomics





# ***IN VENA VERBUM***

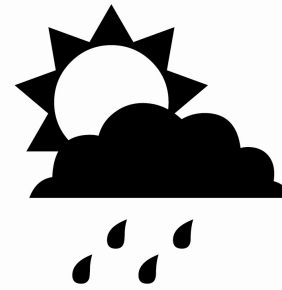
**- Message in a Vien -**



**- Tiddo Bakker -  
- Design Academy Eindhoven -  
- Experience Designer -**

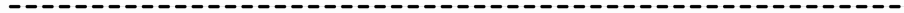
**- Henk Jalink -  
- Center for Biosystems Genomics -  
- Physicist -**





**21 °C**

**CO<sub>2</sub>**





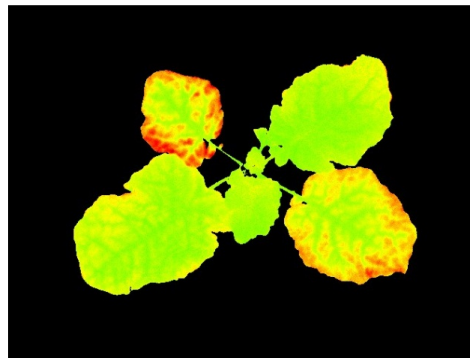


LED Induced Chlorophyll Fluorescence  
Transient Imager

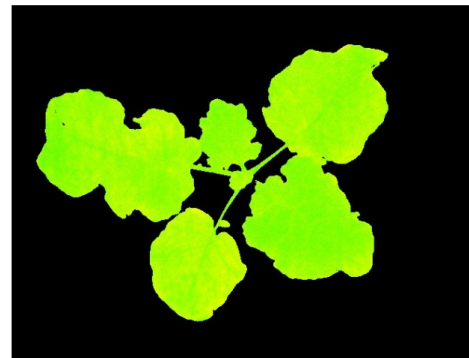




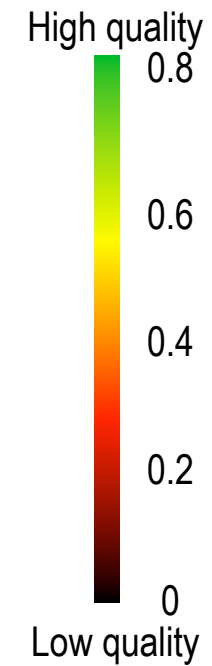
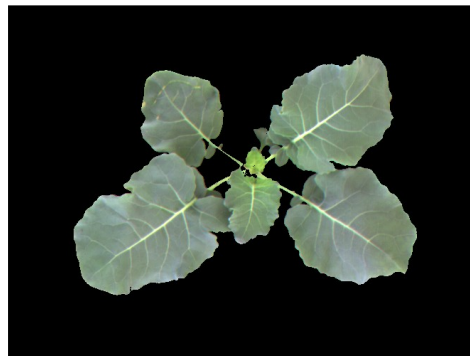
# Real time information of plant response



Low quality

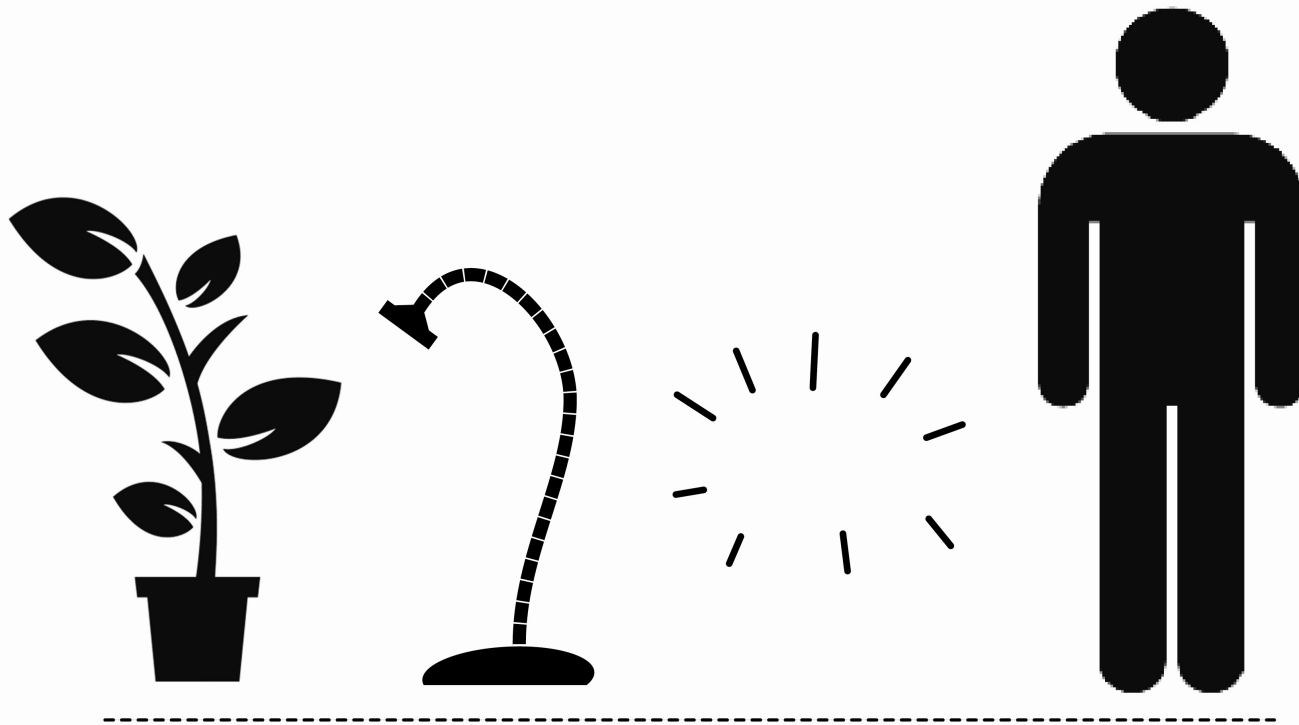


High quality



Colour table.









**tidd0**

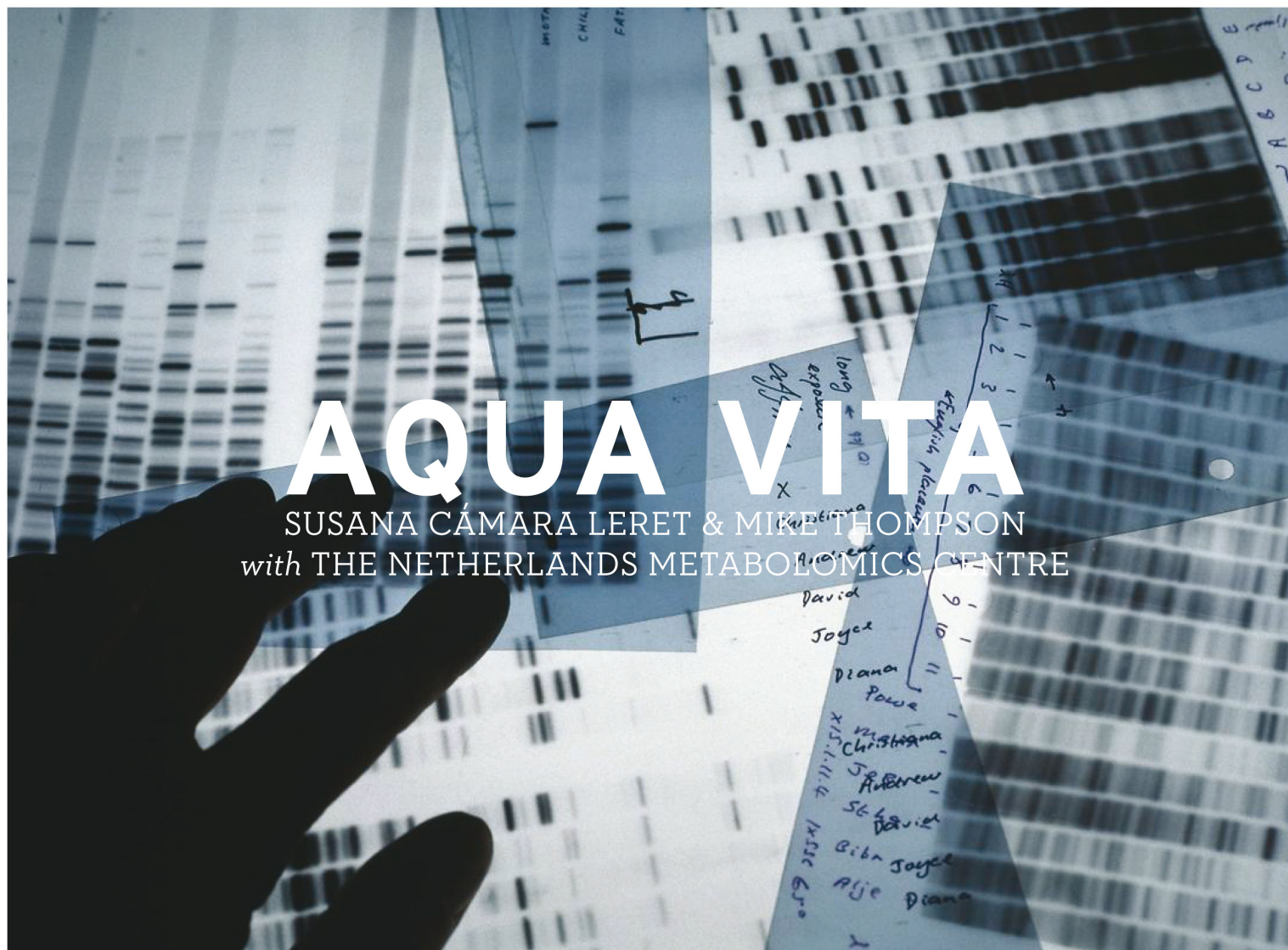
IN VENA VERBUM ©  
[www.tiddobakker.nl](http://www.tiddobakker.nl)



Susane Camara Leret & Mike Thompson  
and  
Netherlands Metabolomics Centre







# AQUA VITA

SUSANA CÁMARA LERET & MIKE THOMPSON  
with THE NETHERLANDS METABOLOMICS CENTRE

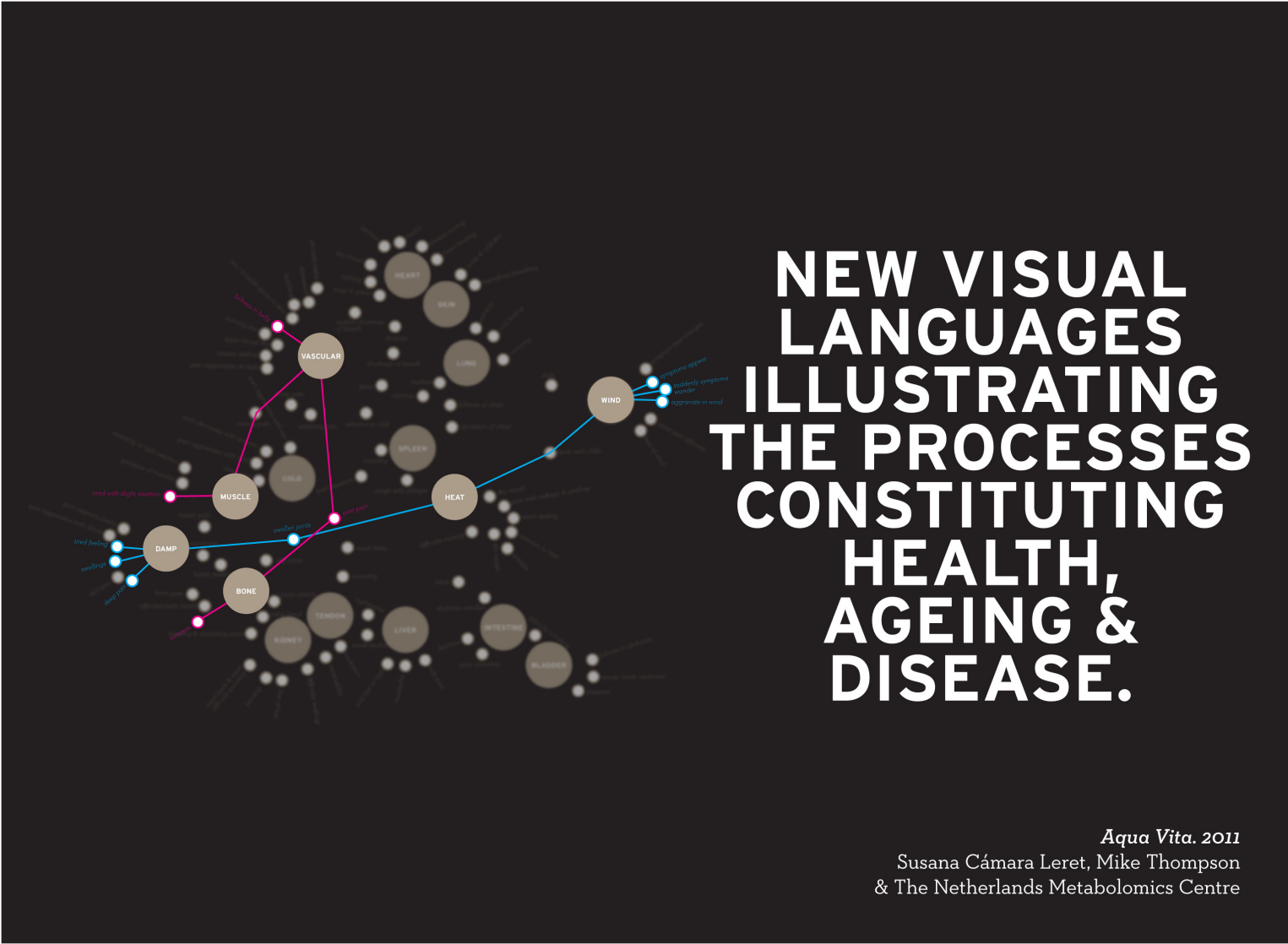




# URINE IS 5% A SUM OF HISTORIES OF AN ORGANISM

*Aqua Vita. 2011*  
Susana Cámara Leret, Mike Thompson  
& The Netherlands Metabolomics Centre





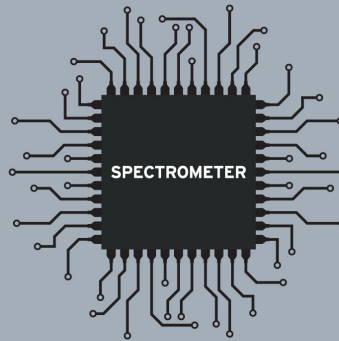


# WE COMBINE THE INSIGHTS OF TRADITIONAL CHINESE MEDICINE WITH METABOLIC INFORMATION.

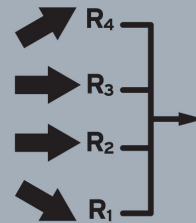
URINE CONTAINS 5%  
'SUM OF HISTORIES'



METABOLIC  
PROFILING  
TECHNOLOGY  
i.e. SPECTROMETER



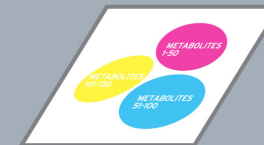
METABOLIC  
READING



TOP LAYER:  
METABOLIC  
PAINTING



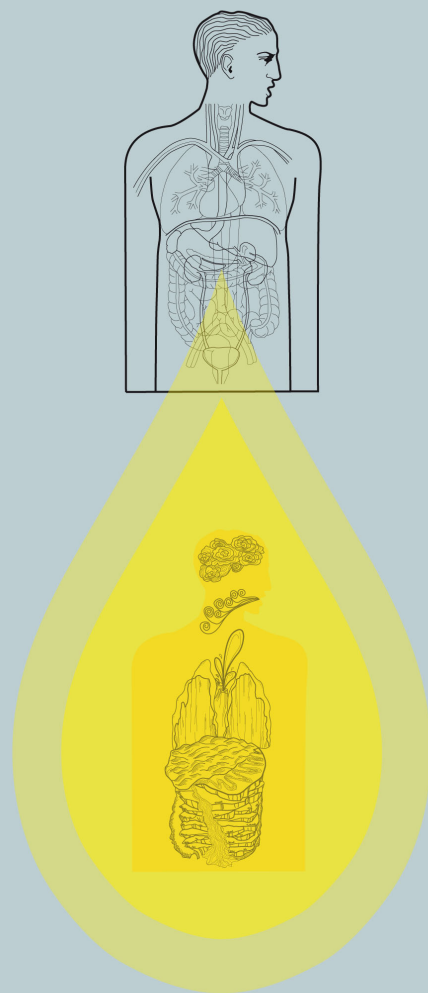
MID LAYER:  
DOCTORS  
VISUALISATION



BASE LAYER:  
IN-DEPTH  
SCIENTIFIC DATA

*Aqua Vita. 2011*  
Susana Cámara Leret, Mike Thompson  
& The Netherlands Metabolomics Centre





# UTILISING THE ARCHIVAL PROPERTIES OF URINE IN A VISUAL DIARY, AQUA VITA ANIMATES THE BOOK OF LIFE.

*Aqua Vita. 2011*  
Susana Cámara Leret, Mike Thompson  
& The Netherlands Metabolomics Centre



Heather Dewey-Hagborg  
and  
Netherlands Bioinformatics Centre





# Stranger Visions

Heather Dewey-Hagborg



Lionel Billiet  
and  
Kluyver Centre for Genomics of Industrial  
Fermentation





# Concrete Lichen

Lionel Billiet

&

Prof. Kees van den Hondel

Kluyver Centre for Genomics of Industrial Fermentation

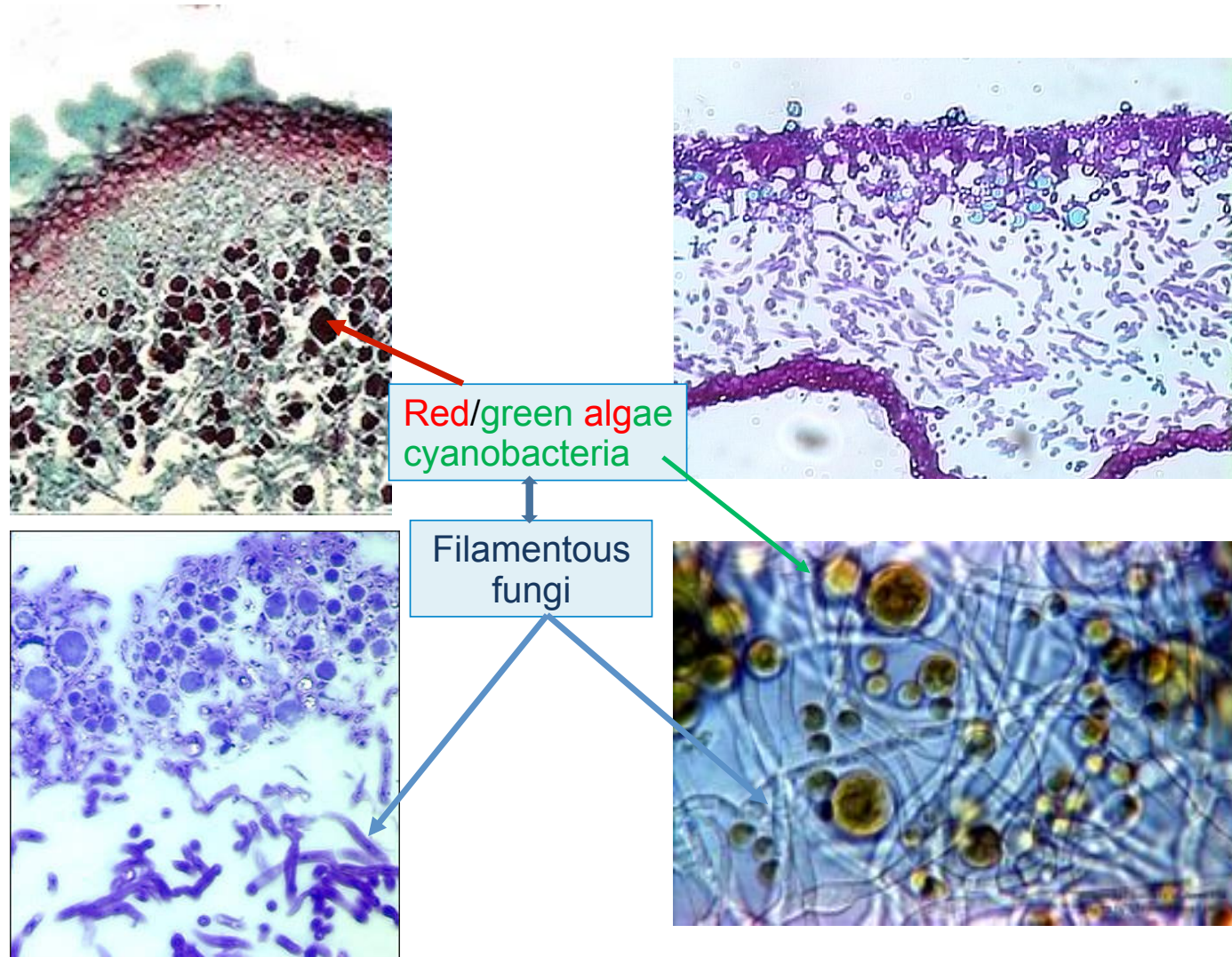
Designers & Artists 4 Genomics Award – december 2011



**Kluyver** | CENTRE | Kluyver Centre for Genomics  
of Industrial Fermentation



## 1. Lichens...





# 1. Lichens...



*Leiden, Oude Vest. Brick border along the water.*

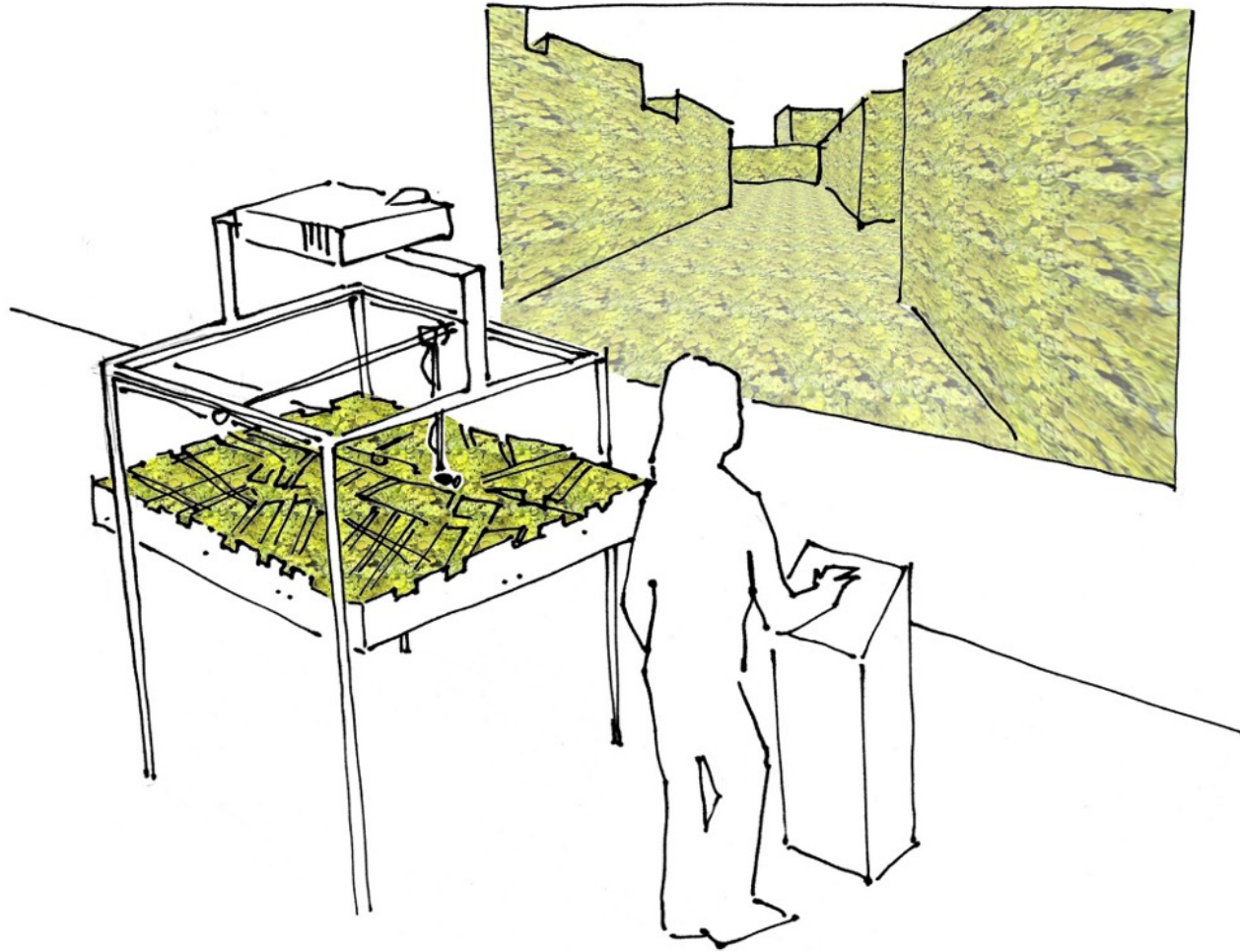


2. As a covering  
layer for concrete





### 3. Proof of concept and installation







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