Biomimicry

What can we learn from ature about architecture?

Door

Lydia Fraaije

FRAAi architecten

Introduction

Biomimicry

Theory

Biological Watersanitation plant

Biomimicry Academie

Bio^mi – Nano structures

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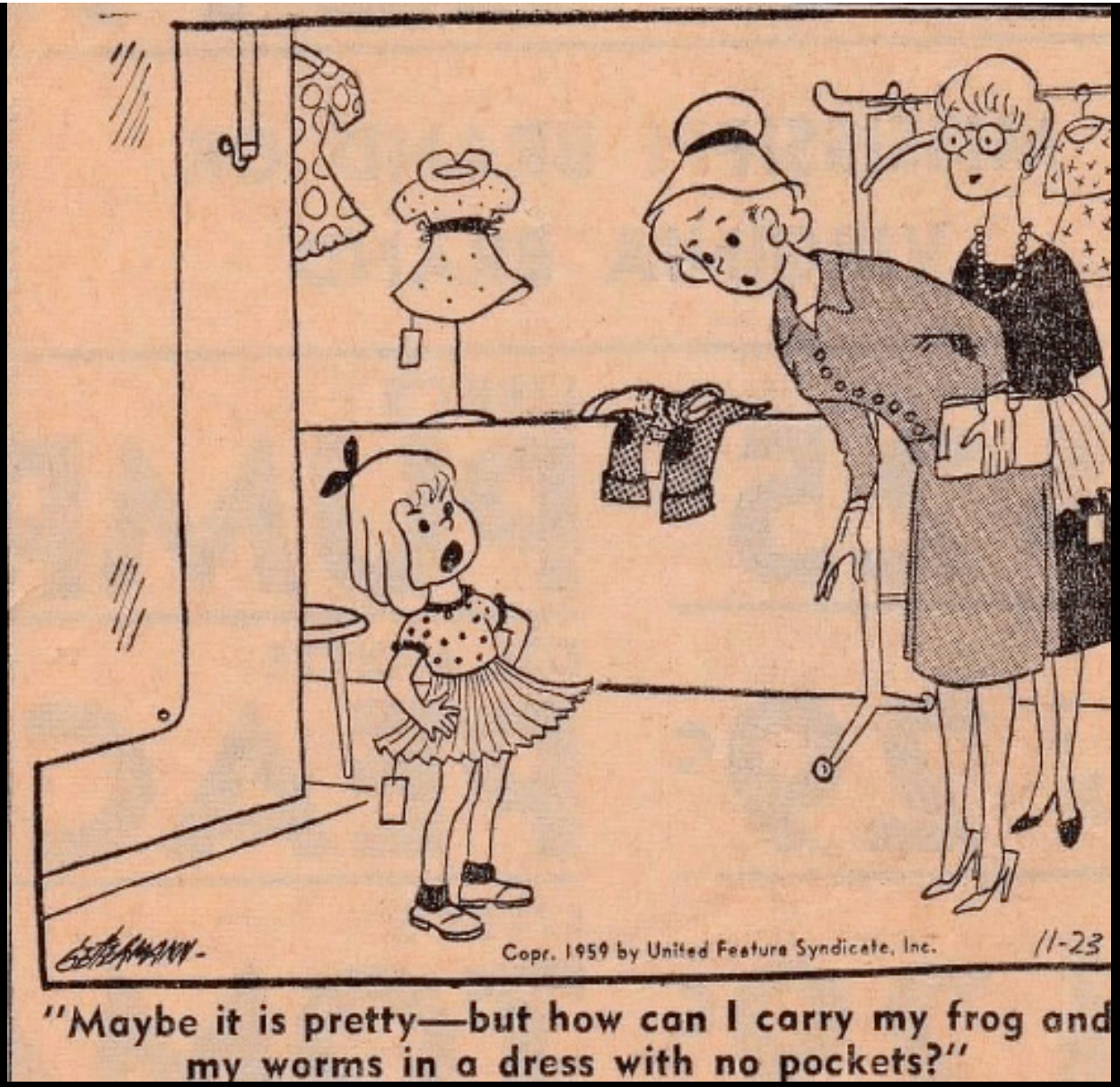

"Het is misschien mooi … maar hoe kan ik mijn kikker en wormen dragen in een jurk zonder zakken?"


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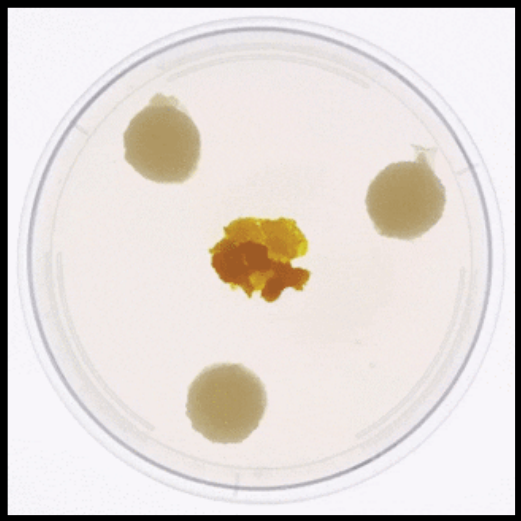
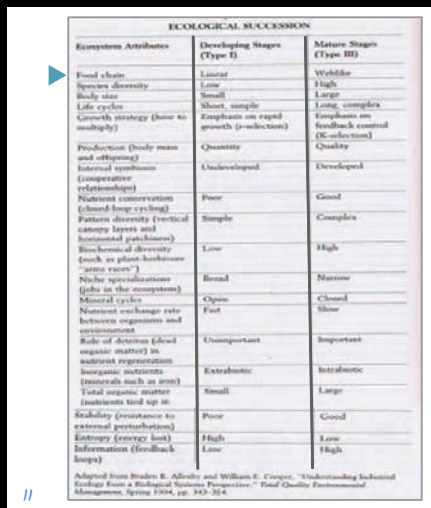
Digitale Werkplaats
presenteert



Slime Mold
Inspiratie voor efficiënte infrastructuur



Ecosystem denken

Spinwaves - Biomimicry Hackathons — Serena Scholte

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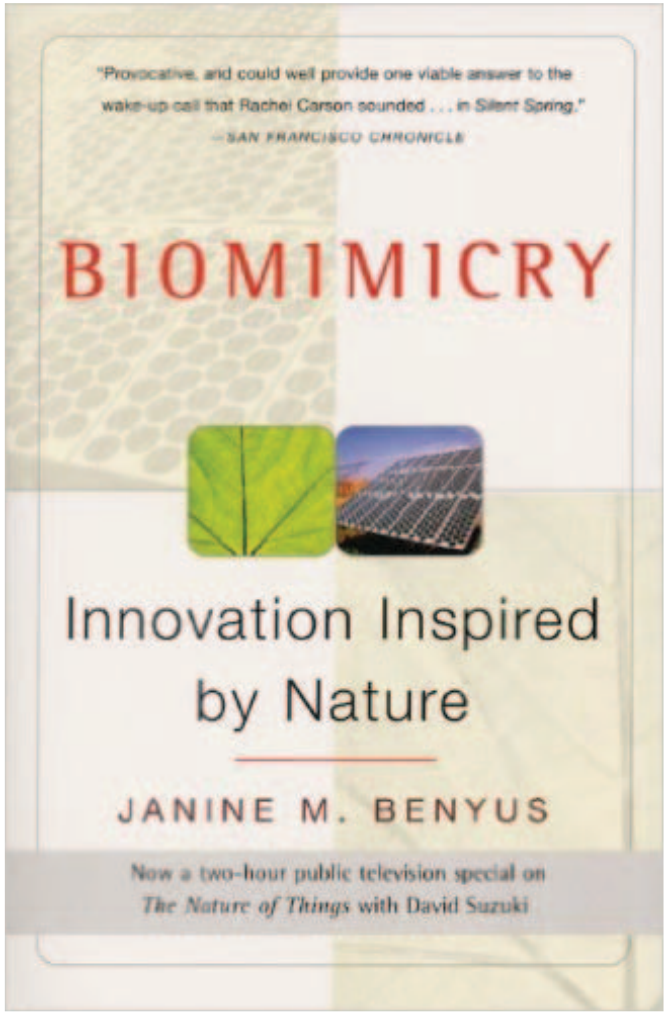
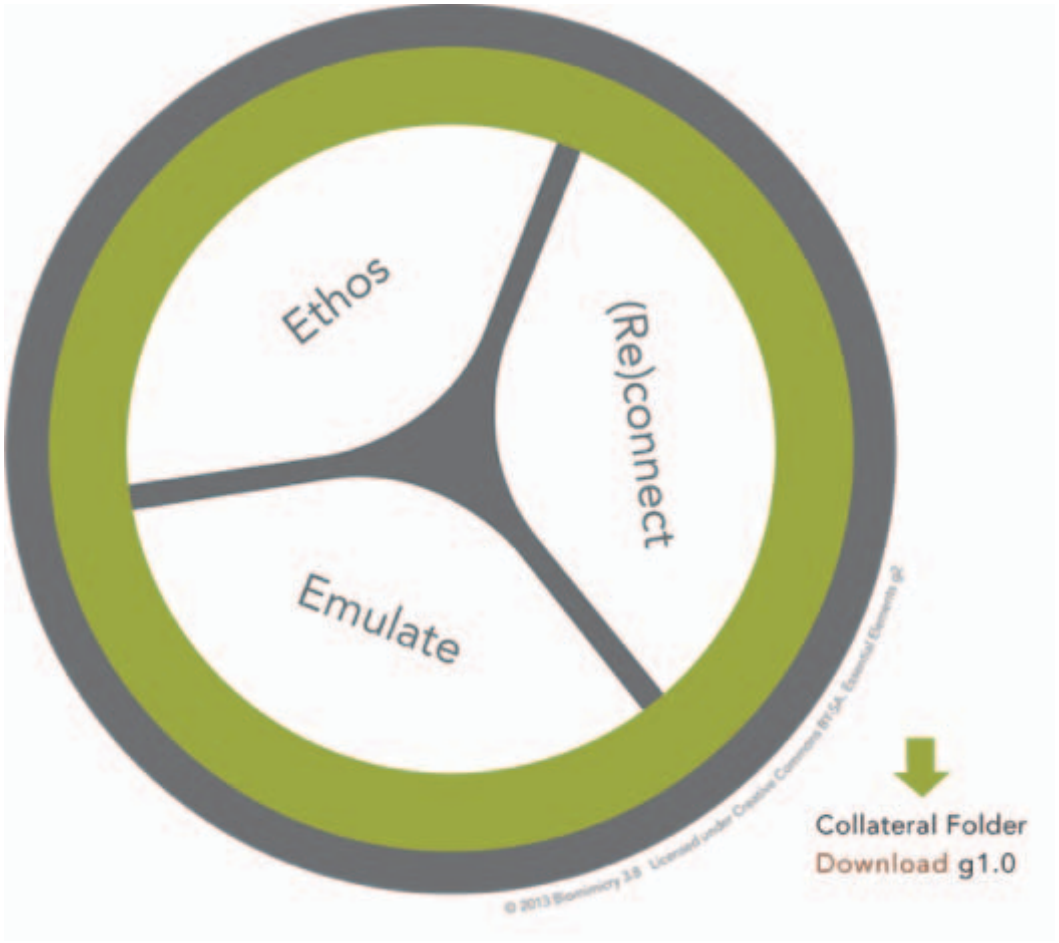
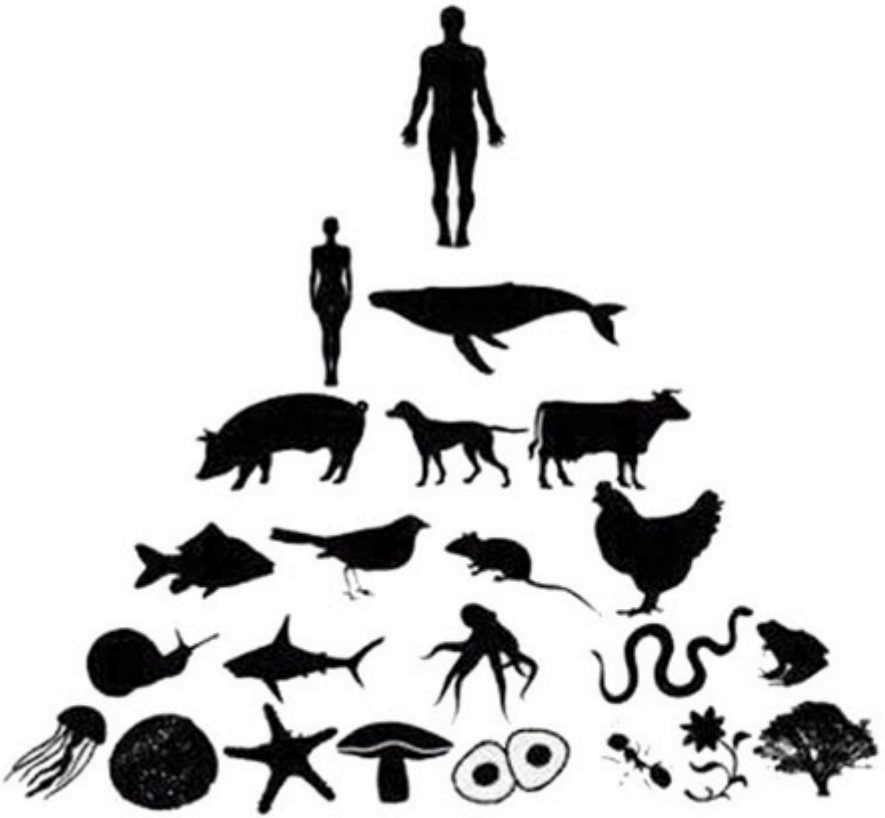

"Provocative, and could well provide one viable answer to the wake-up call that Rachel Carson sounded . . . in Silent Spring."
—SAN FRANCISCO CHRONICLE
BIOMIMICRY
Innovation Inspired by Nature
JANINE M. BENYUS
Now a two-hour public television special on
The Nature of Things with David Suzuki


Ethos
(Re)connect
Emulate
Collateral Folder
Download g1.0


CONSERVATION
PRESENTS
SPEAKING
JULIA
ROBERTS
HARRISON
FORD
KEVIN
SPACEY
ROBERT
REDFORD
IAN
SOMERHALDER
#NatureIsSpeaking

EGO



ECO

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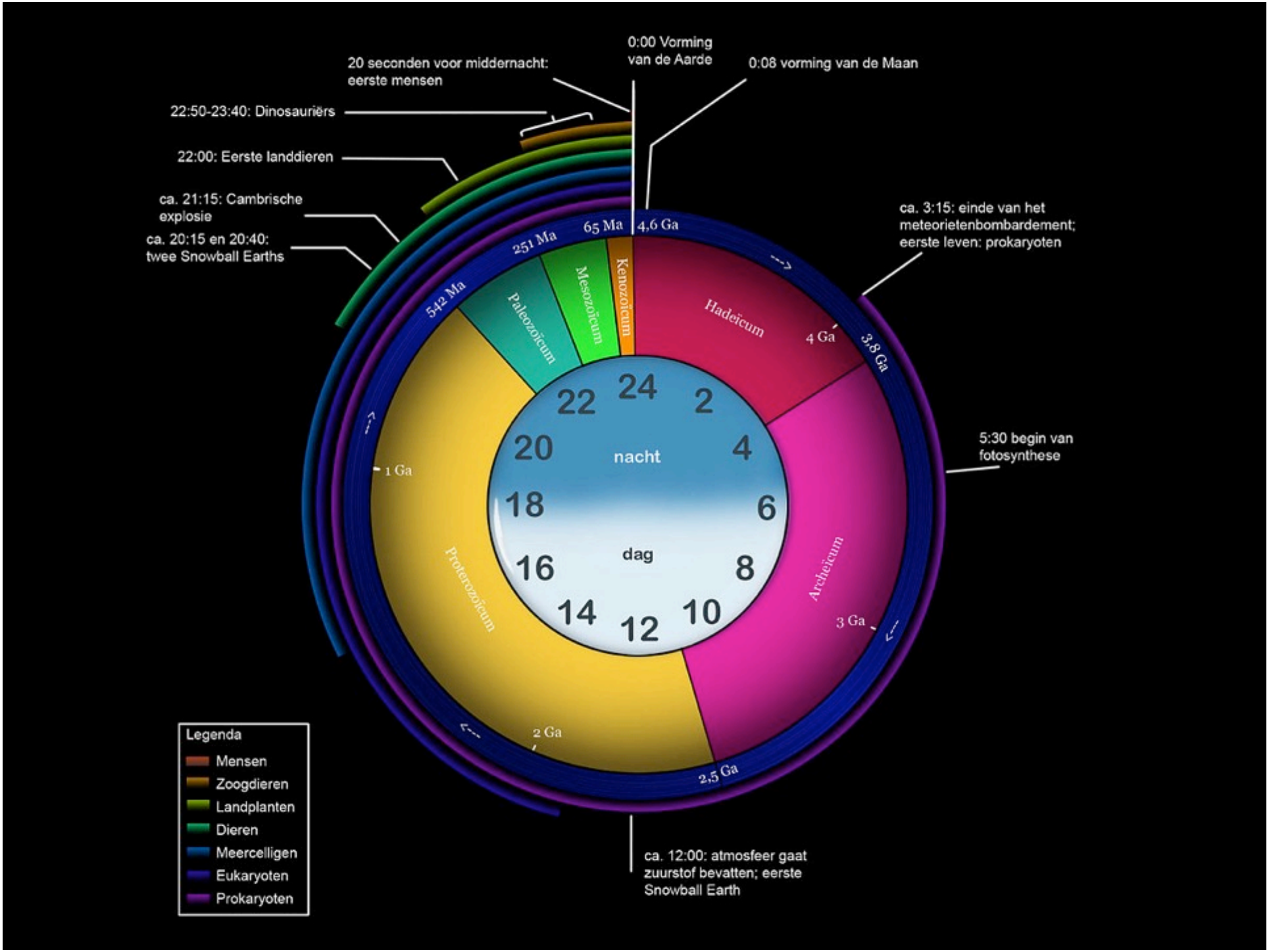
0:00 Vorming van de Aarde
0:08 vorming van de Maan
20 seconden voor middernacht: eerste mensen
22:50-23:40: Dinosauriërs
22:00: Eerste landdieren
ca. 21:15: Cambrische explosie
ca. 20:15 en 20:40: twee Snowball Earths
ca. 3:15: einde van het meteorietenbombardement; eerste leven: prokaryoten
5:30 begin van fotosynthese
ca. 12:00: atmosfeer gaat zuurstof bevatten; eerste Snowball Earth
65 Ma
4,6 Ma
251 Ma
542 Ma
4 Ga
3,8 Ga
3 Ga
2,5 Ga
2 Ga
1 Ga
Hadeïcum
Archeïcum
Proterozoïcum
Paleozoïcum
Mesozoïcum
Kenozoïcum
nacht
dag
24
2
4
6
8
10
12
14
16
18
20
22
Legenda
Mensen
Zoogdieren
Landplanten
Dieren
Meercelligen
Eukaryoten
Prokaryoten

Plantintelligentie

Oryza Sativa | Rijst

BBC documentaire: A Plant's World; the Intelligence of Plants
Francis Halle; Botanicus en bioloog

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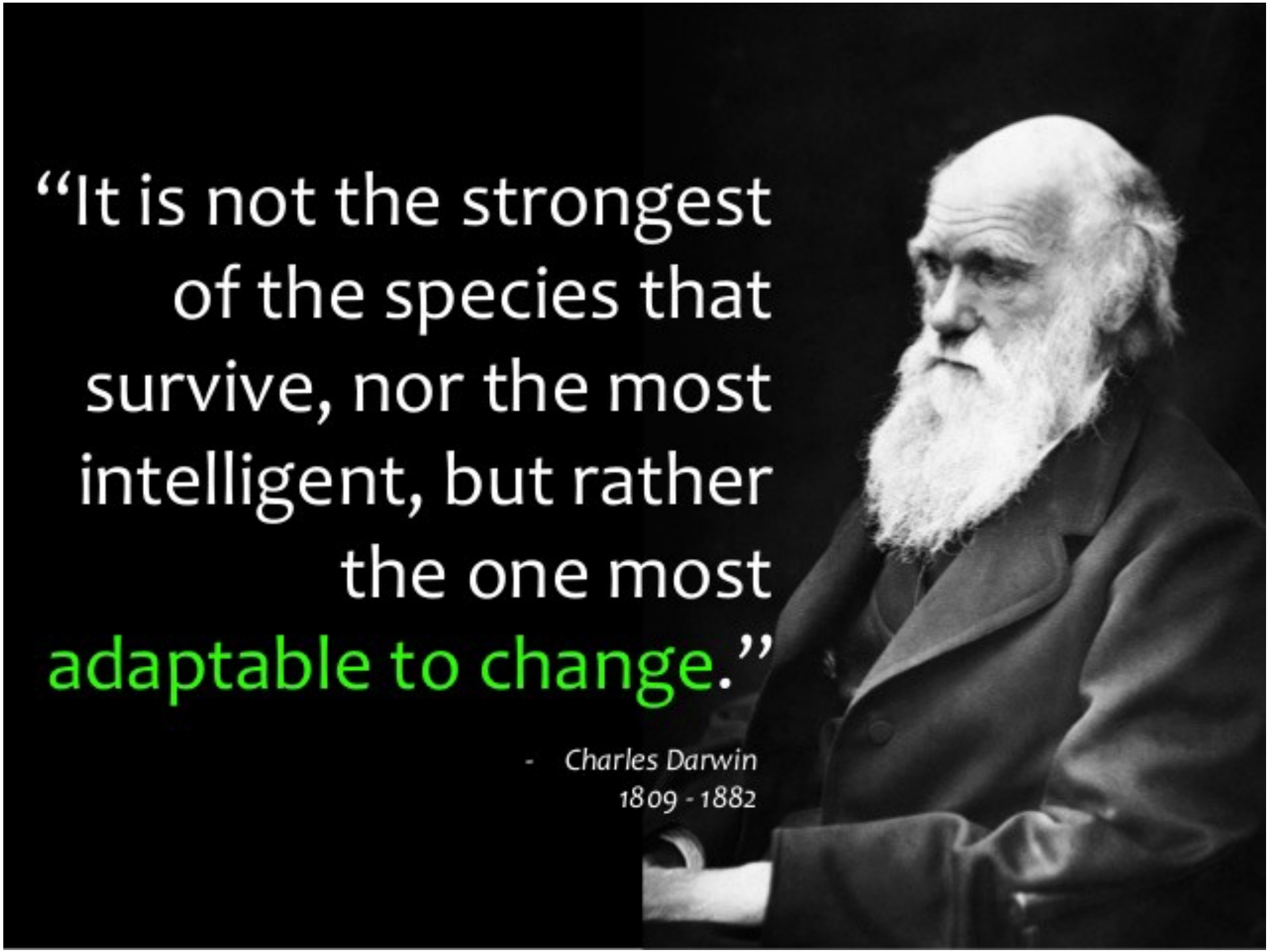
"It is not the strongest
of the species that
survive, nor the most
intelligent, but rather
the one most
adaptable to change."
- Charles Darwin
1809 - 1882

Biologische Waterzuivering

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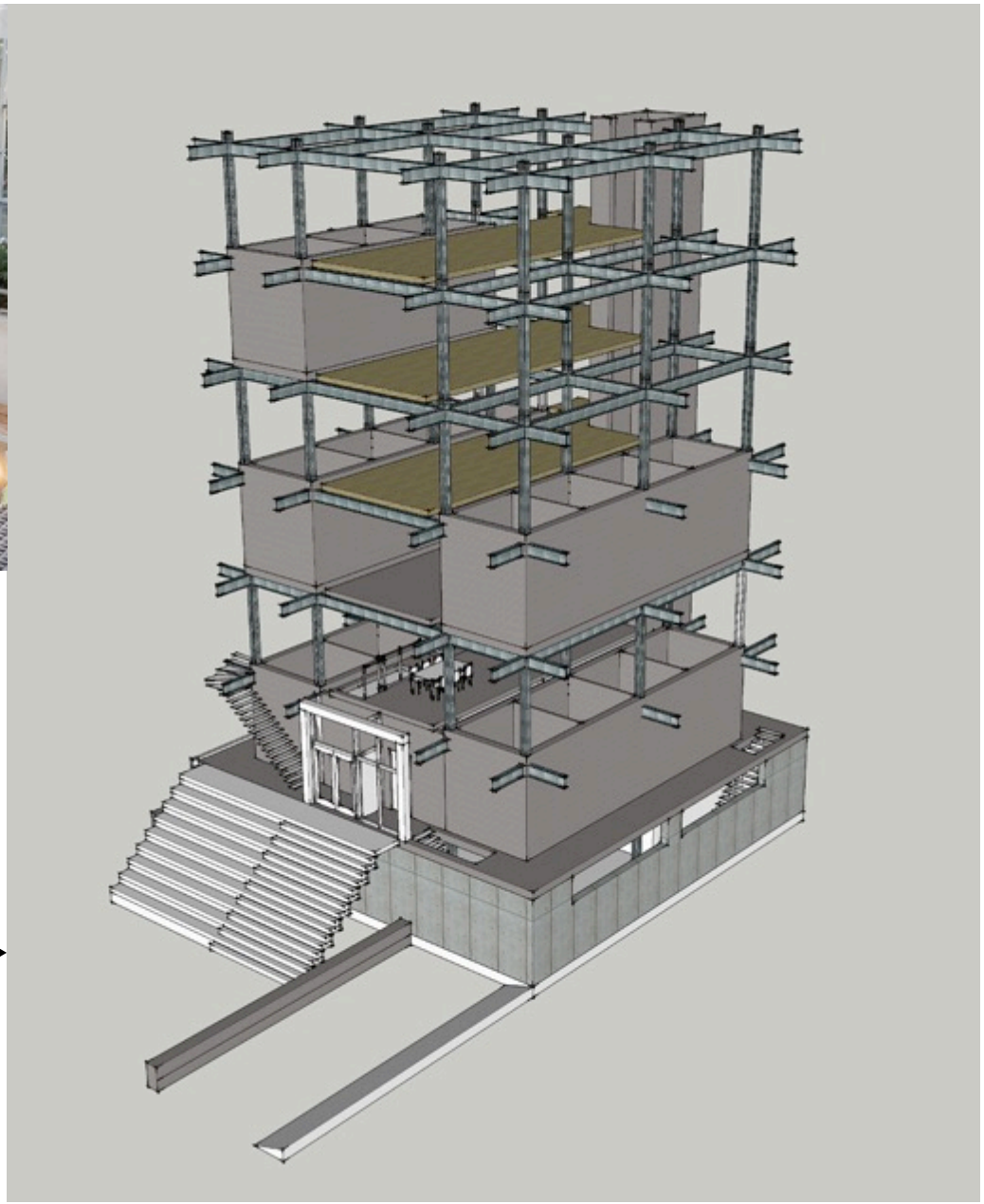

^

' Biomakerij Abdij Koningshoeven

- Landelijke setting
- 1 laag
- 12 reactoren
- Warm & voedselrijk water

VS

Waterzuivering Strijp S -

>

- Stedelijke setting
- Gestapeld
- 24 reactoren
- 2 stromen afvalwater ->
  riool & vervuilt grondwater

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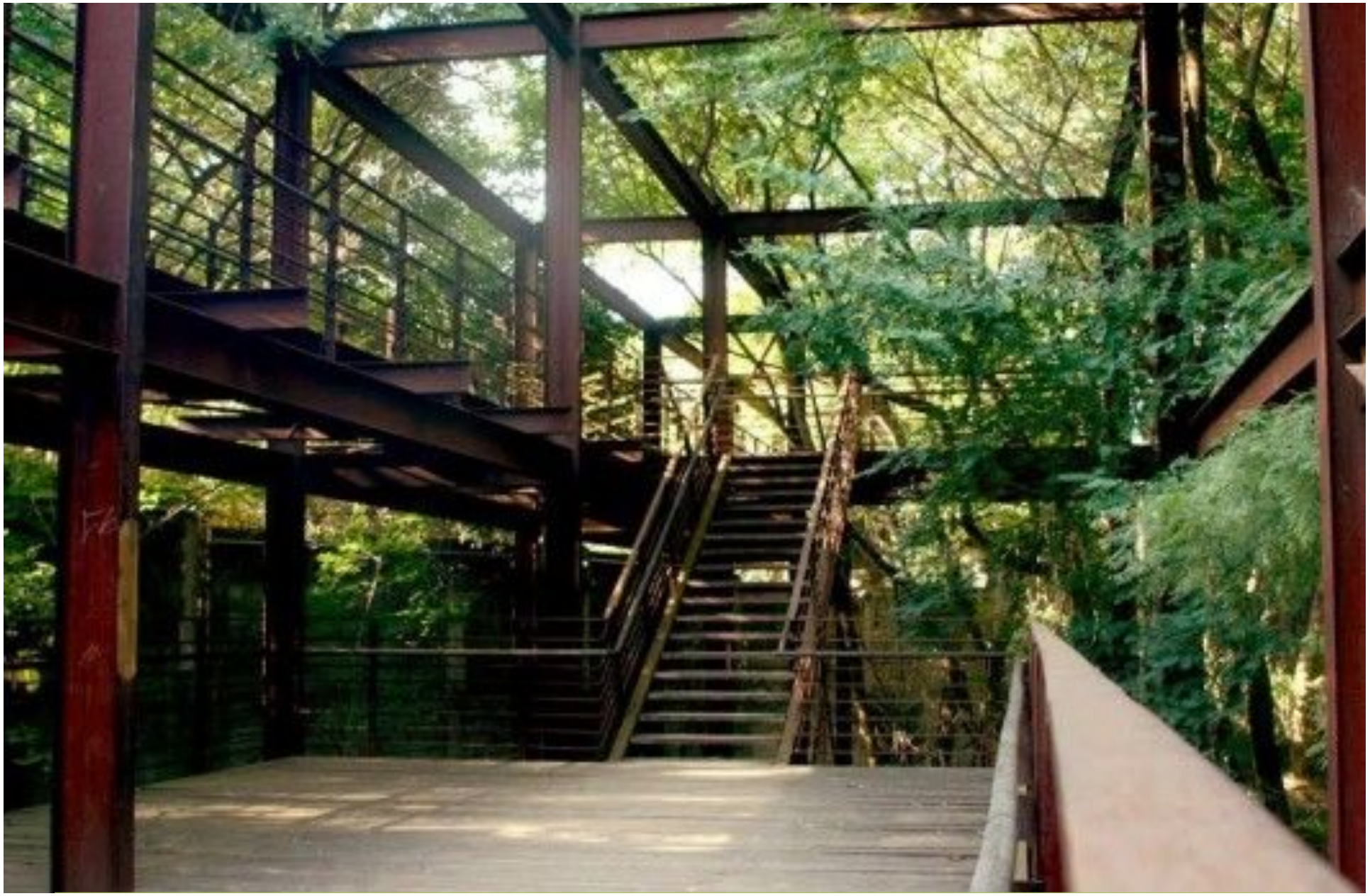

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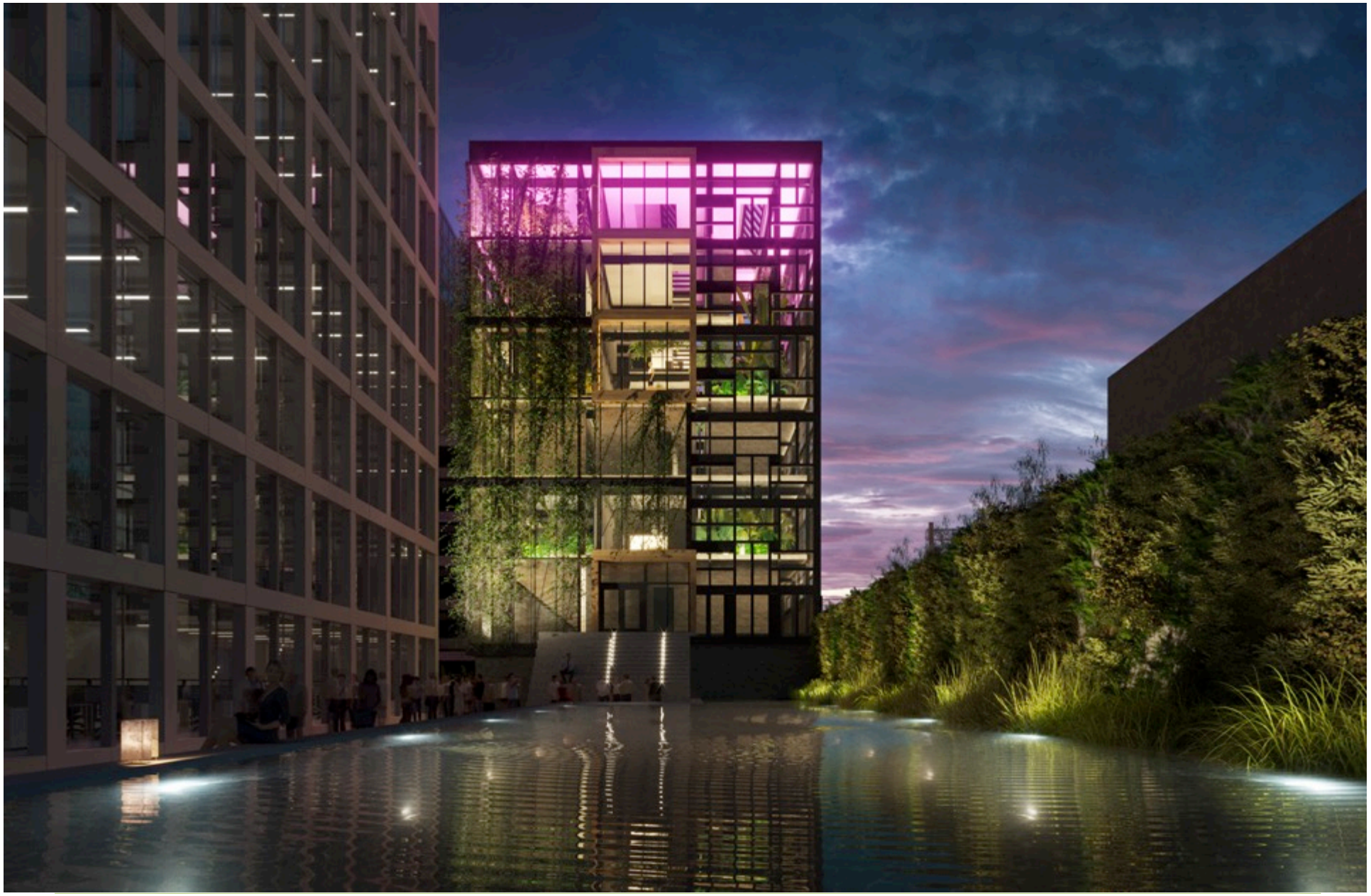

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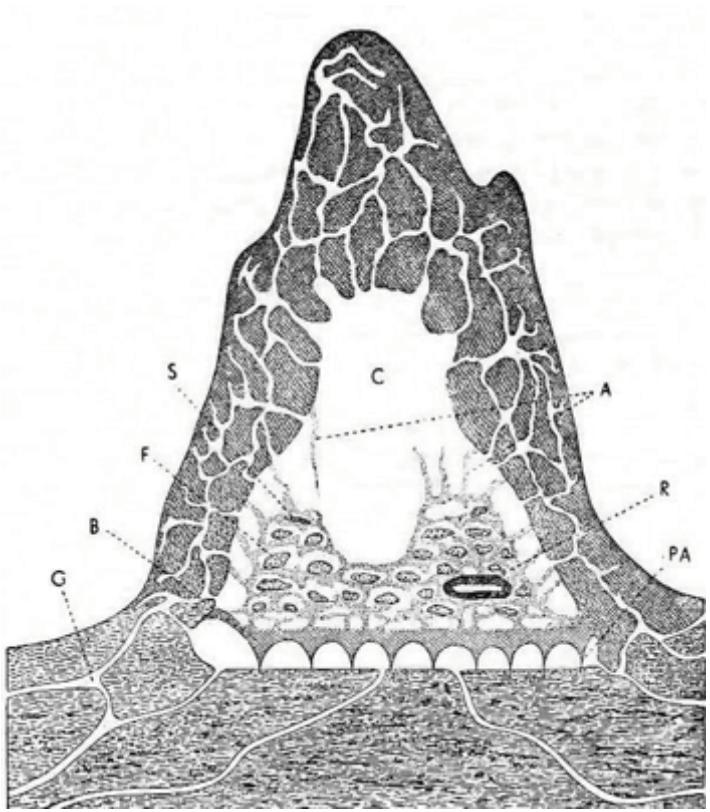
Termietenheuvel ventilatie



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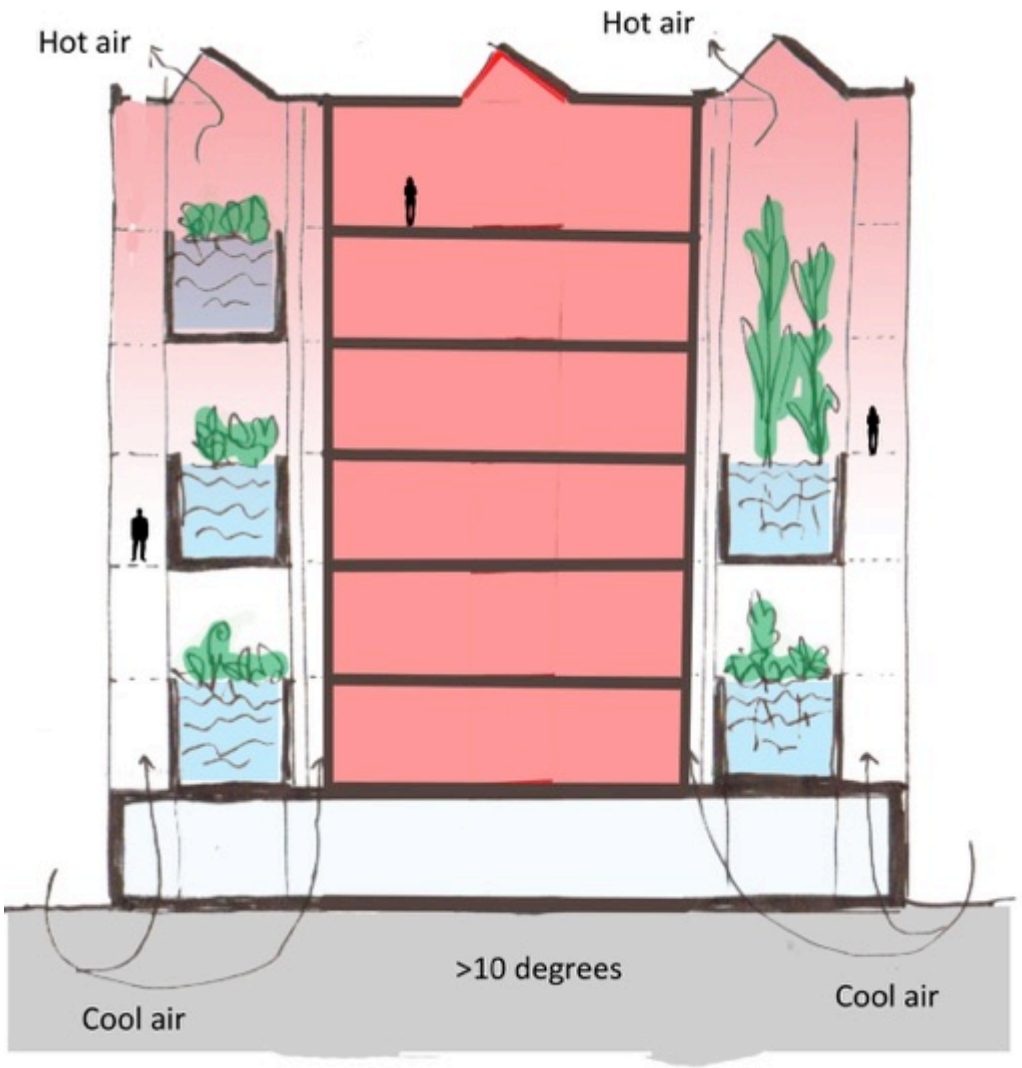

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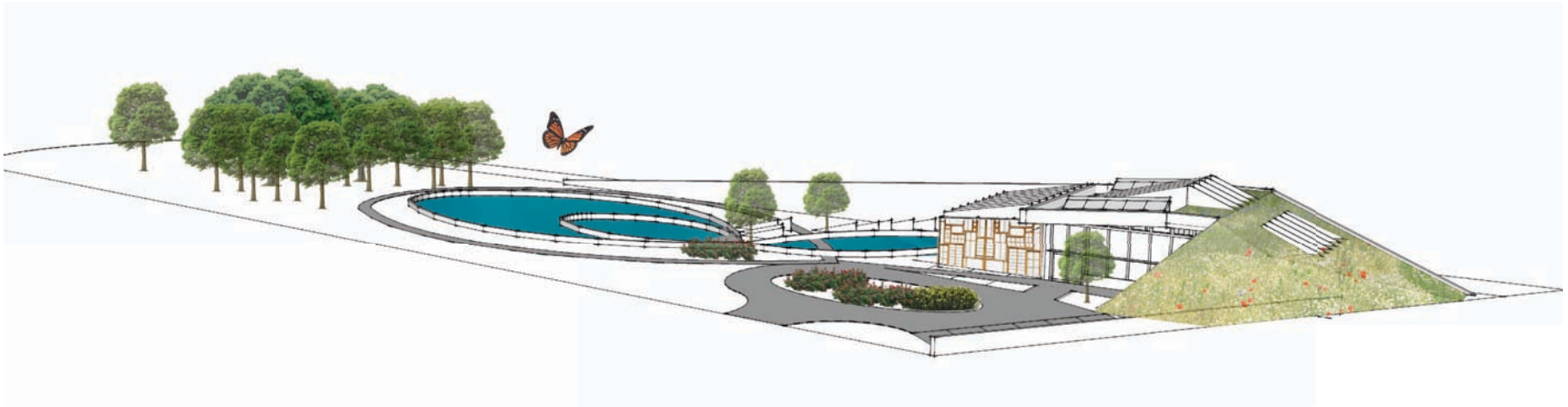

biomimicry NL

gemeente BOXTEL

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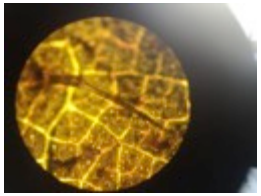
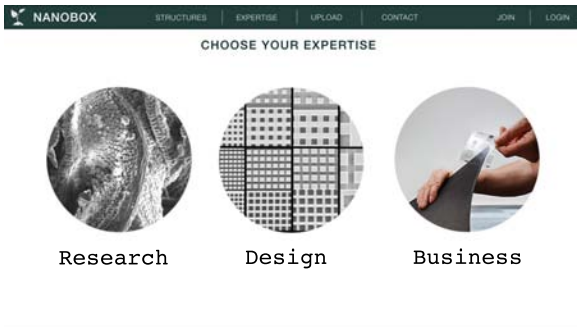
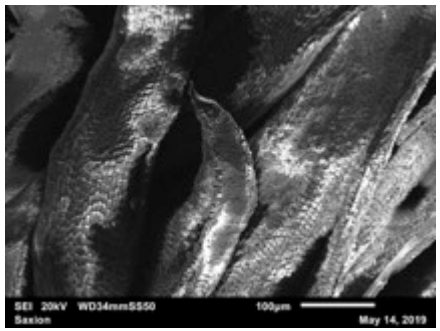



NANOBOX
STRUCTURES
EXPERTISE
UPLOAD
CONTACT
JOIN
LOGIN
CHOOSE YOUR EXPERTISE
Research
Design
Business


SEI 20kV WD34mmSS50
100µm
Saxion
May 14, 2019


secrets
of
nature
Biomi

Biomi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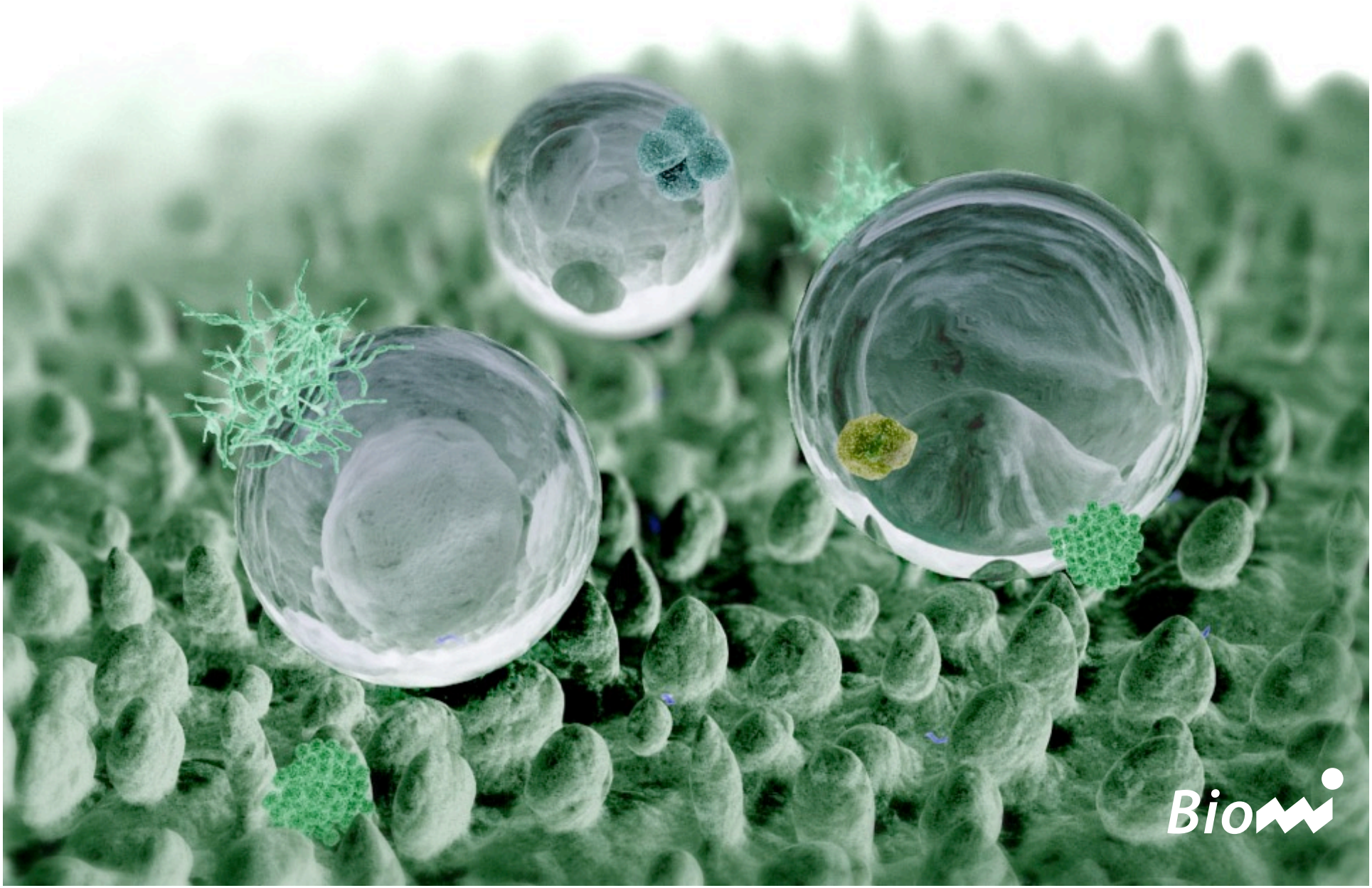
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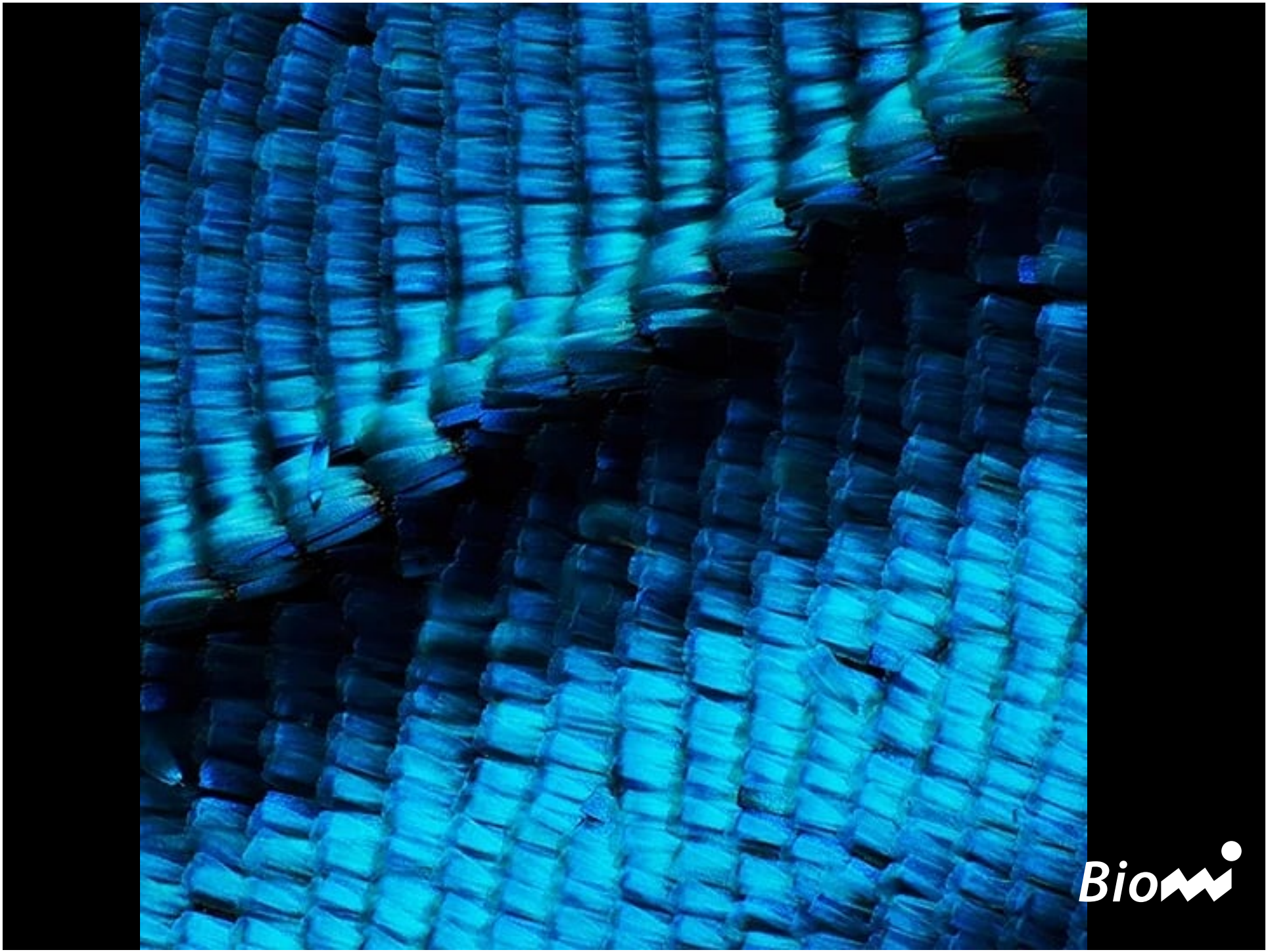
Fabián Jiménez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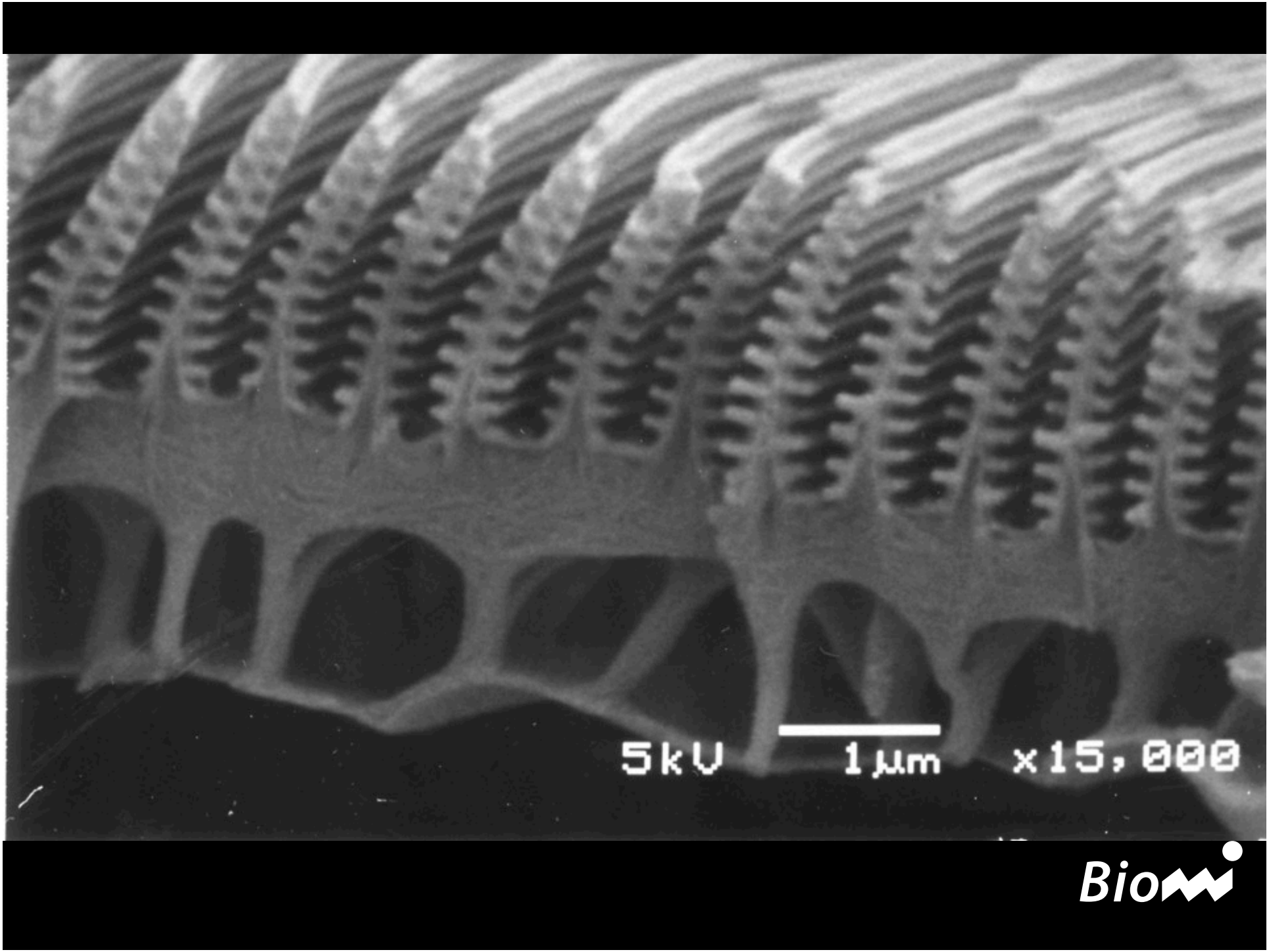
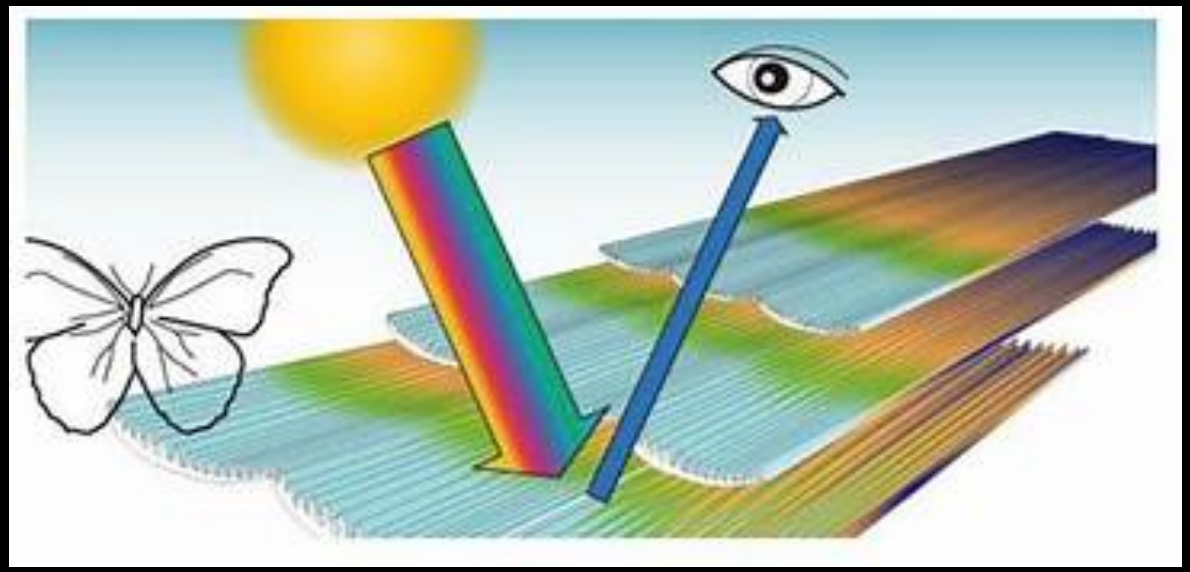
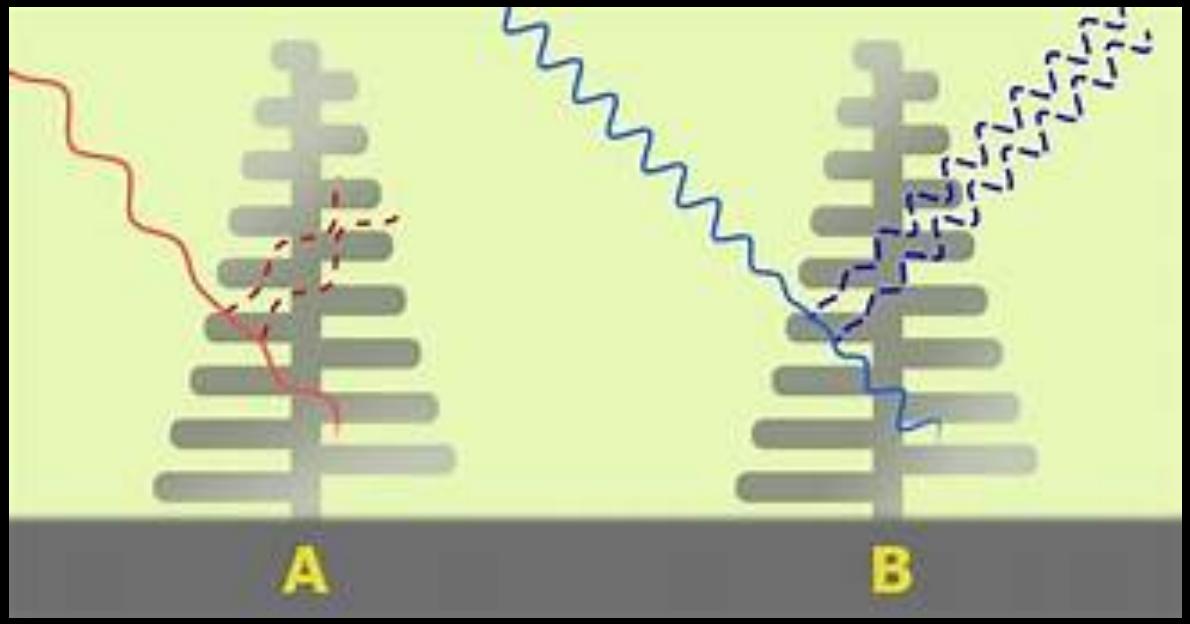

5kV
1µm
x15,000
Biomi





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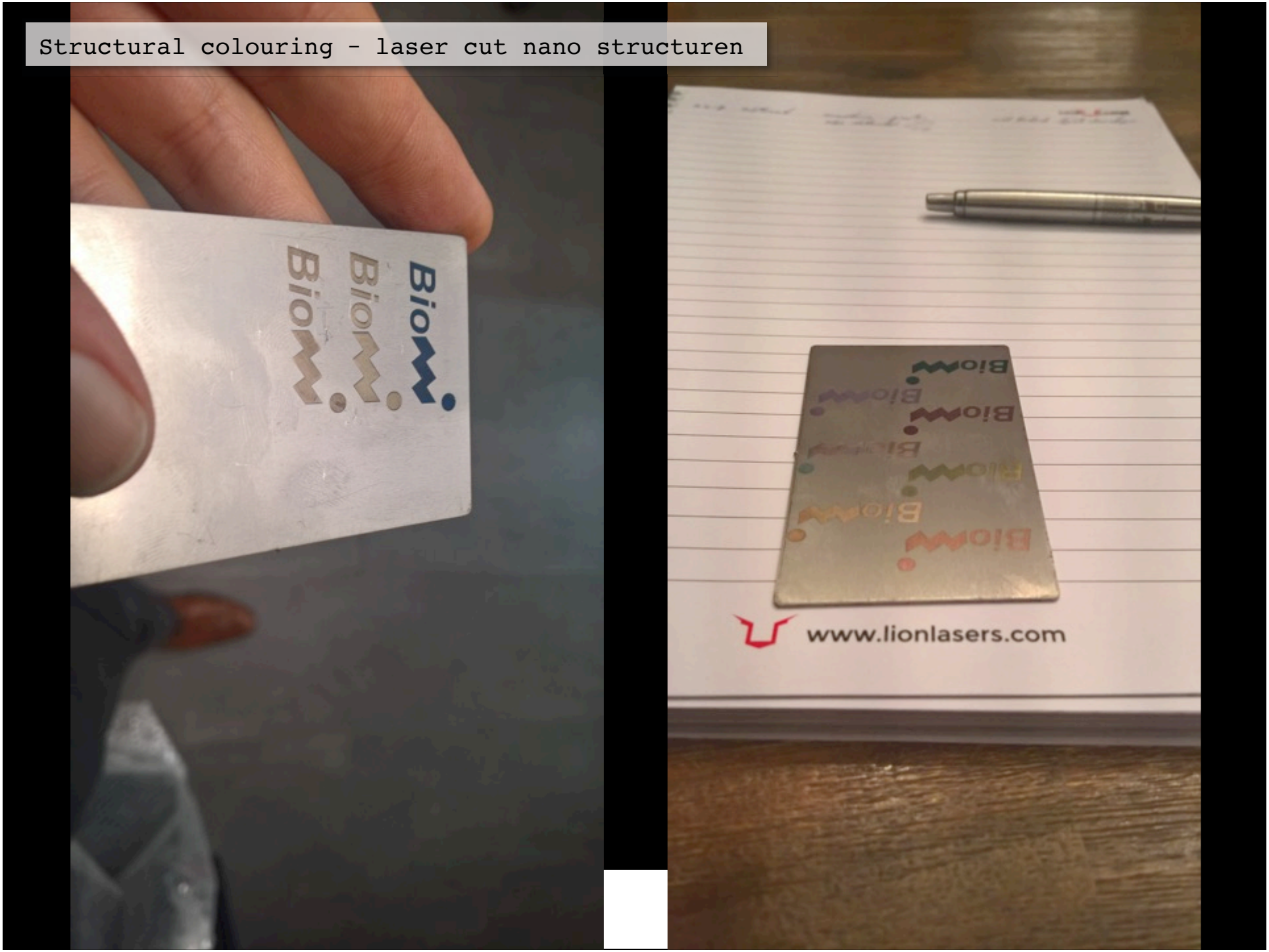
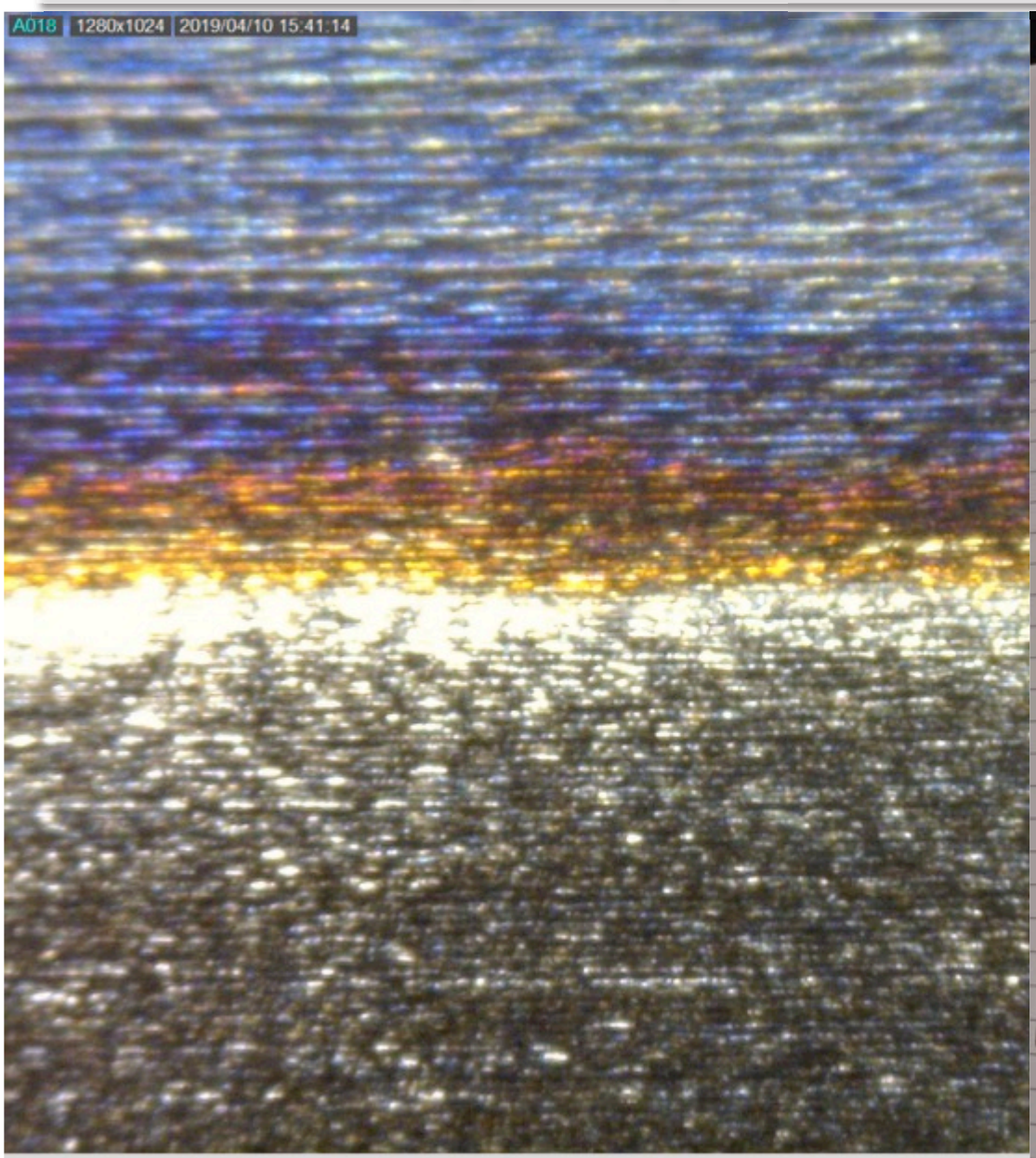
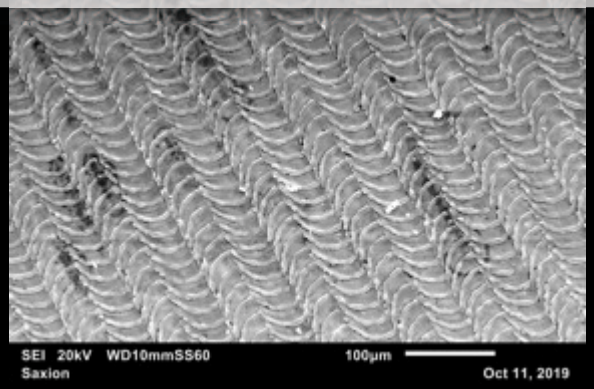
Structural colouring - laser cut nano structuren

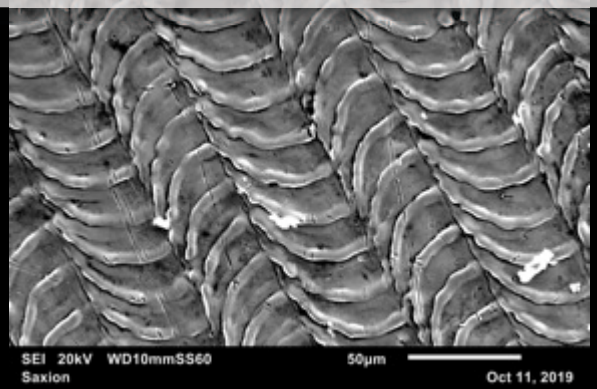


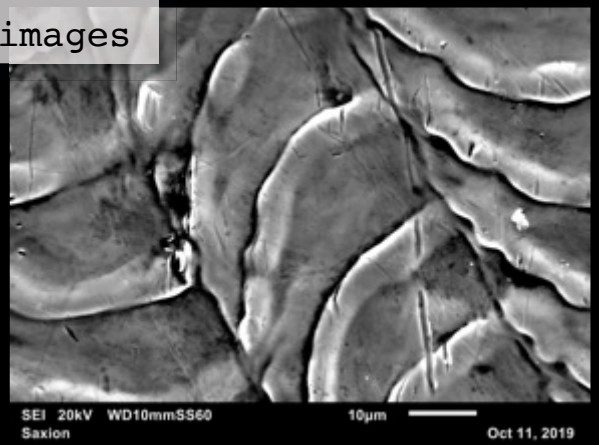
Structural colouring - Kleurenpalet

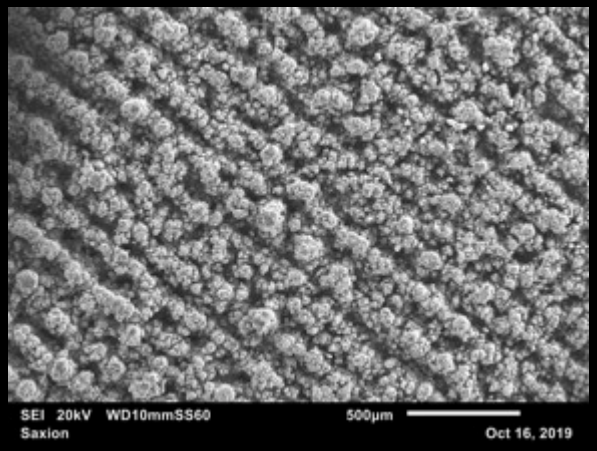


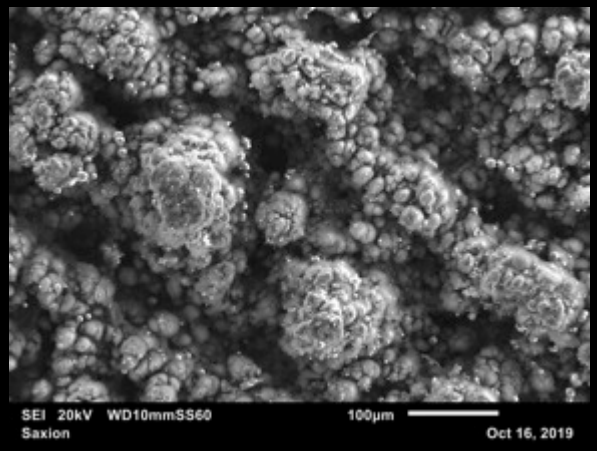
Structural colouring - laser cut nanostructuren - SEM images

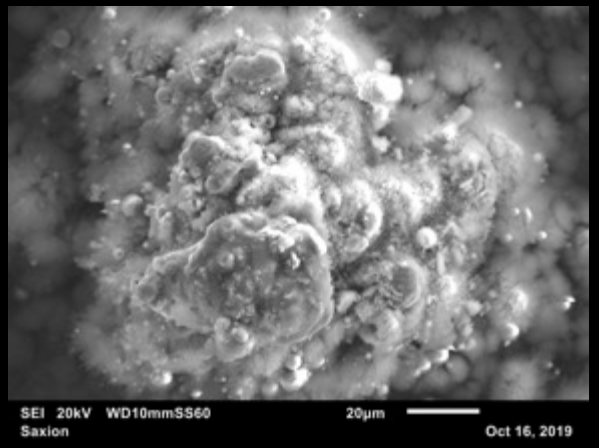


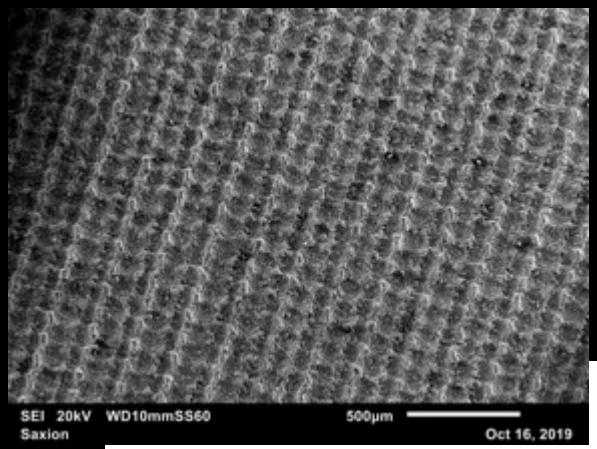


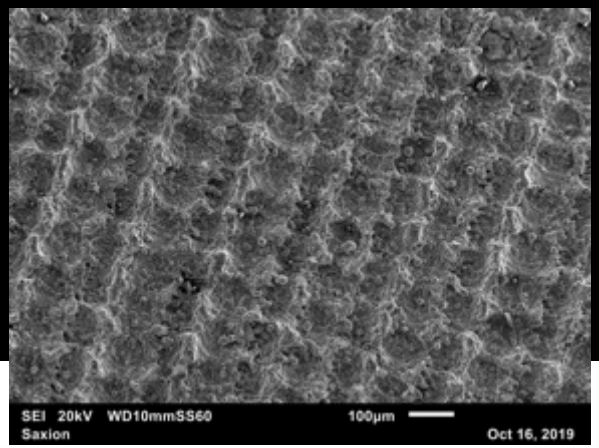


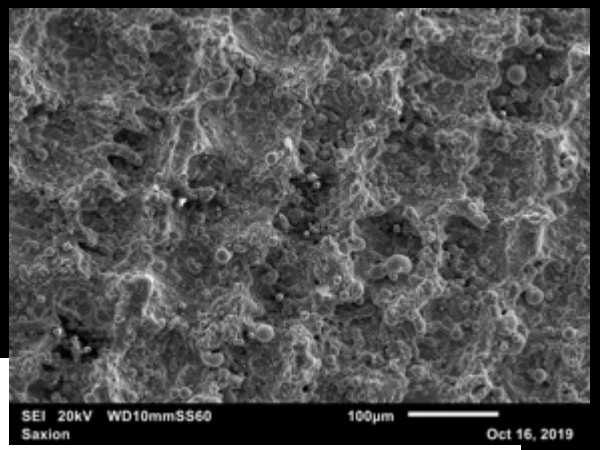












Biomi

BIO
NANO
SCOPE
BOX

6 x natural inspirations:

1. Lotus leaf
2. Shield namibic beetle
3. Musquito eyes
4. Wing Morpho butterfly
5. Gecko foot
6. Shark skin

Material District 2020

Ahoy Rotterdam

Biomi

GECKO

The function:
special adhesive technology.

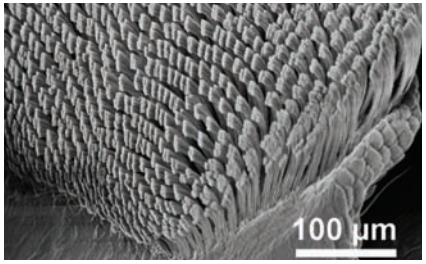
The foot of the GEKKO "sticks"
infinitely and on almost any surface.

What can we learn from the gecko?
The gecko has special soles. They are equipped with a nanostructure that has been developed in such a way that geckos can even run up against glass. This is an interesting "sticking technique" for us for various reasons. Firstly because of strength, because there is a lot of force on a small surface. The feet must be able to support more than the weight of the gecko. Secondly, the gecko must also be able to easily loosen its feet again to take the next step. And thirdly, they have to stick this and release it again and again infinitely.

How does it work?
The toes of the foot are provided with very small skin folds. Each fold contains millions of very small hair-like structures. These hairs each have so many shoots that they generate a force that only takes place at the nanoscale. Due to the extremely small hairs, the contact surface becomes so large that a 40-kilo gecko can hang on to the ceiling. These forces are called vander-waals forces.

FUNCTION

Frontside



NANOSTRUCTURE

What is the advantage?
Current adhesives are either strong and difficult to remove or they are weak and easy to remove. In addition, there is always glue on it, made from materials from the petrochemical industry.
The adhesives can often only be used once, because they wear, get dirty and / or stick to themselves. They also have the disadvantage that they sometimes release on their own or cannot be stuck on the right surface.

What if?
What if we use the gecko adhesive technique for "capturing" carpet tiles? Interface has developed TacTiles® for this. With TacTiles® transparent plastic squares are made from PET (recyclable plastic). They are provided with a nanostructure based on the adhesive technique of the Gecko. With this technique, carpet tiles are connected to each other horizontally. This creates a "floating floor" that does not expand or shrink. This way no glue is needed and sticky mess and damage to the subfloor is prevented. TacTiles® are therefore ideal for installing carpet tiles quickly, easily and cleanly.

APPLICATION

Backside

BI
NAN
SC
B
PE
X

Price box: € 750,- (excl.taxes/BTW)

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