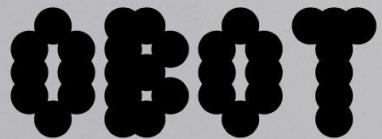


PERTURBANT FLUIDS



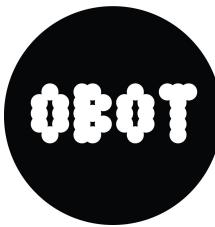
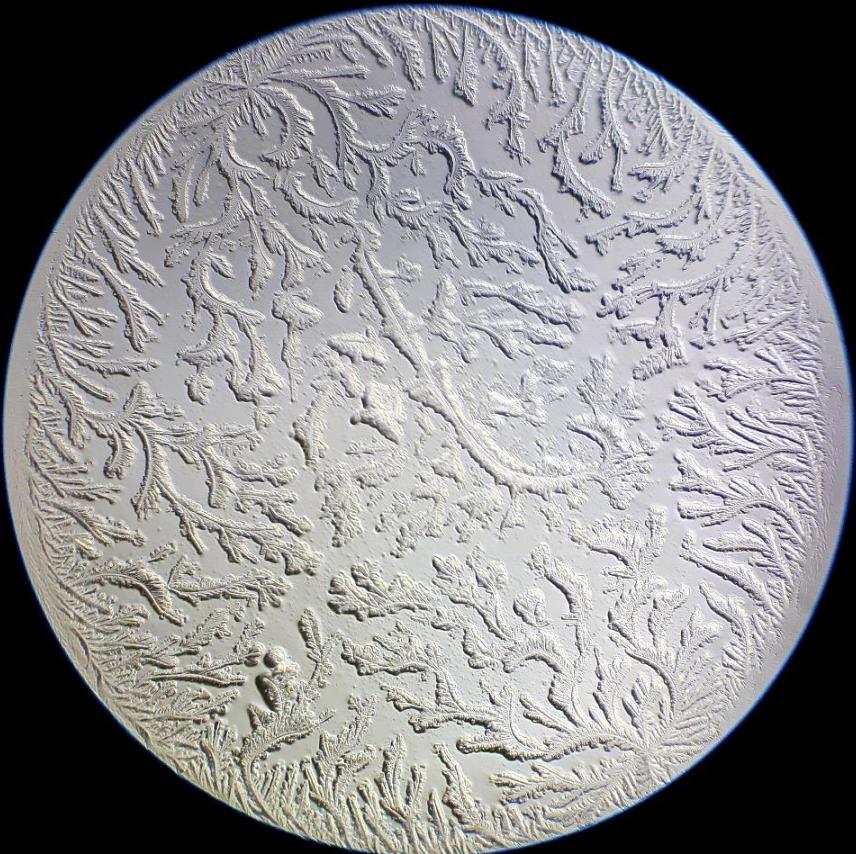
By OBOT with Zoe Romano



Our Bodies Our Technologies
a project by Maddalena Fragnito and Zoe Romano

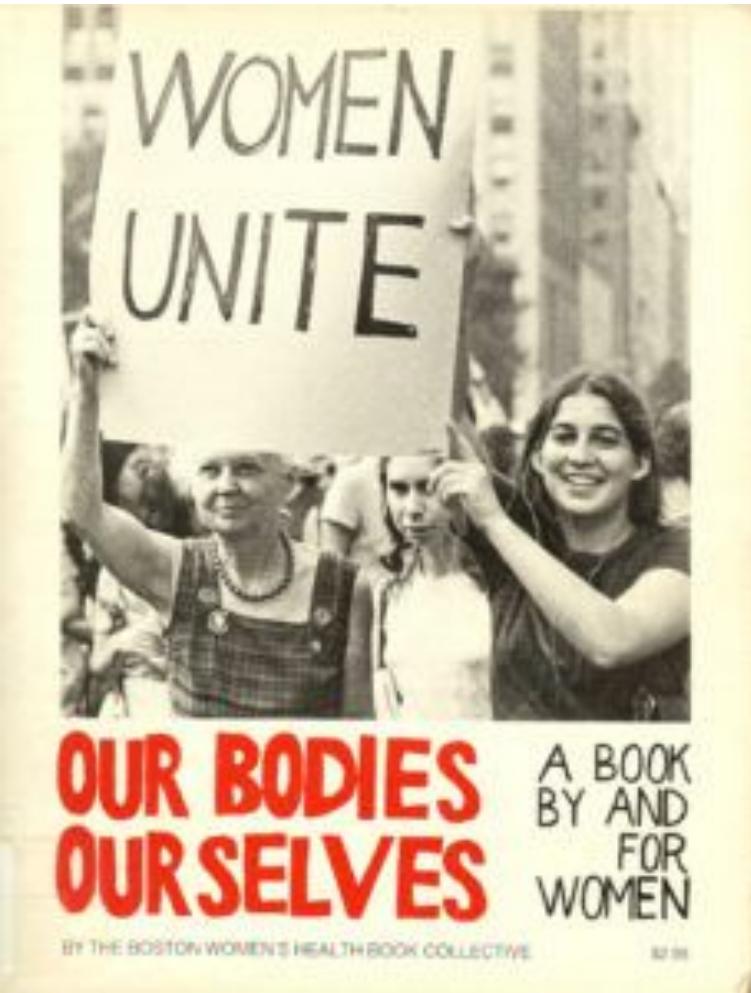
..Our Bodies Our Tech is a nomadic wetlab. We work on science and technology from a transfeminist queer perspective. We look for ways to lower the barriers to research, production and scientific knowledge. We seek new forms to access tools, protocols and data by promoting co-research practices..

-> obot.pubpub.org



We are experimenting with
questioning as a
collaborative practice of
radical pedagogy.

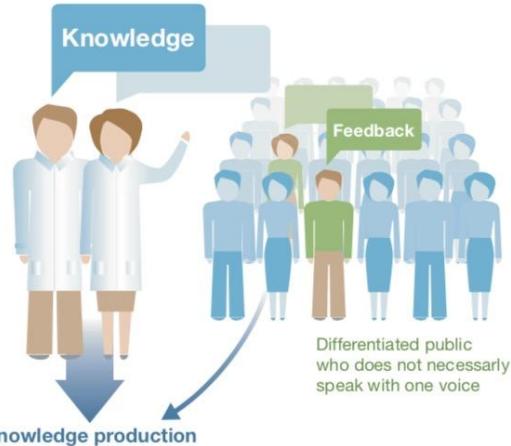
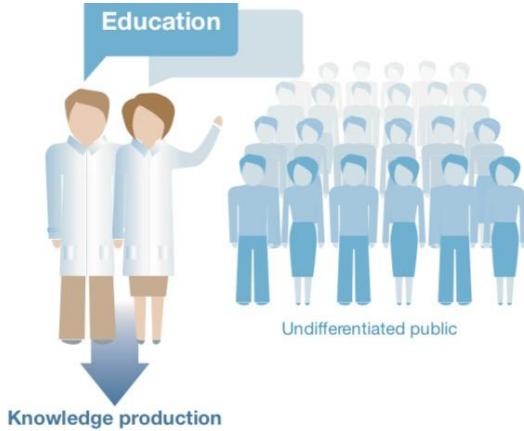
We think research as a
collective device
for social transformation



"We weren't encouraged to ask questions, but to depend on the so-called experts,"

"Not having a say in our own health care frustrated and angered us. We didn't have the information we needed, so we decided to find it on our own."

Nancy Miriam Hawley



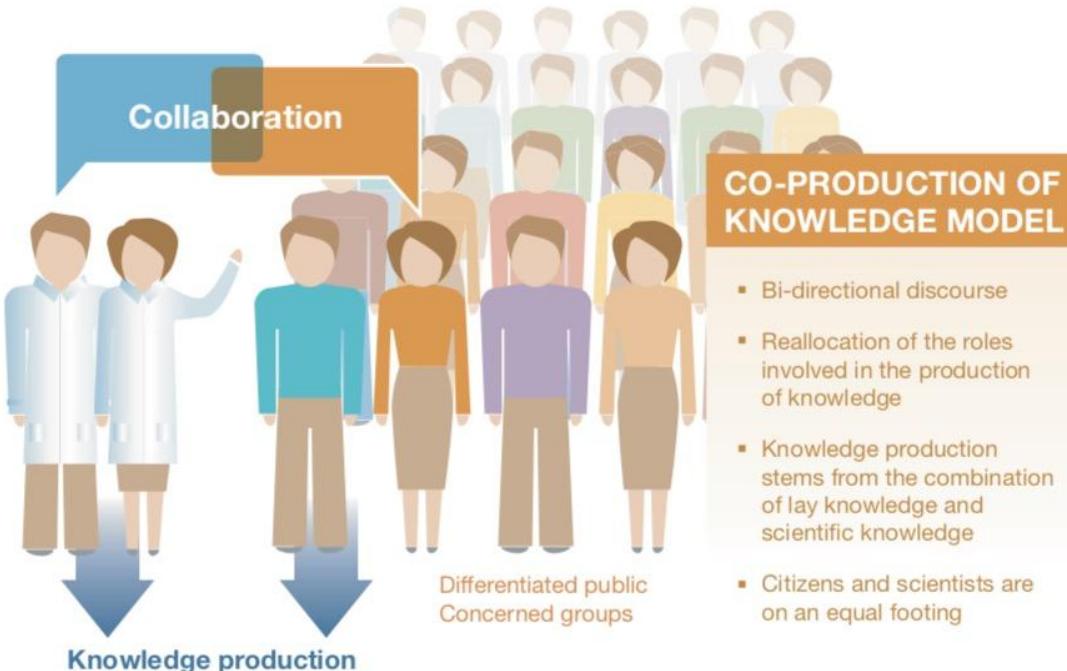
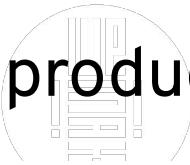
There is a tendency in the scientific community to think that citizens suffer from a **deficit of knowledge** and are incapable of grasping the complexity of science. As such, scientists believe that the public are in need of education.

The 'public debate' model considers that non-scientific **knowledge from citizens is enriching** for the definition of research challenges and the application of scientific knowledge.

Thinking outside the "knowledge deficit" box

doi: [10.15252/embr.201438590](https://doi.org/10.15252/embr.201438590)

Situated Knowledge production



The 'co-production of knowledge' thinks that citizens have both pertinent experience and competence to participate in defining **social and technological issues** and that they should be involved in forming 'research collectives' and producing legitimate knowledge.

2020/2021
space setup in Milan



2020
residency in
Barcelona



2021
workshop&
exhibition in
Hamburg

MK&G

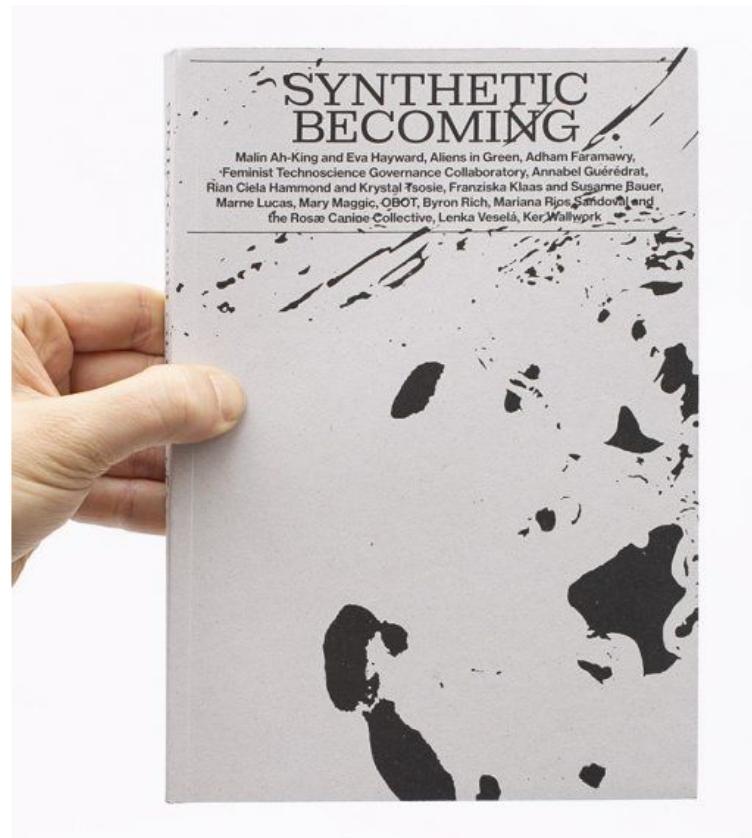
Museum
für Kunst
& Gewerbe
Hamburg

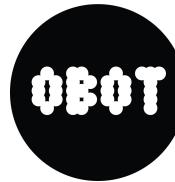
<http://kinlab.it>

2021 Catalogue



December 2022 Book





WHAT is toxic and **WHAT** is pure?

WHO is missing in this space?



FOR WHOM did you research today?

are **CARE** and **TECH** allied?

03



Galerie, FAVU

Brno, Czech Republic



GOSH
Gathering for Open
Science Hardware

October 2022 [GOSH](#)

sabato 29 ottobre 2022

MICRO SCAPES

obot.pubpub.org

curato da **OBOT**

ospitato da **KINLAB**

supportato da  **GOSH**
Gathering for Open
Science Hardware





GOSH

Gathering for Open
Science Hardware

Regional event GOSH





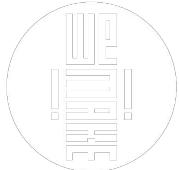
December 2022

Experimental laboratory of
sensorial onomomaturgy



Previous work

- Health & Care
- Prototyping & Pilot
- Mapping & Supporting



Milan's Makerspace



DIGITAL
SOCIAL
INNOVATION



2018-2019

Opening technologies for smart communities

Empowerment happens when individuals and collectives can acquire awareness, skills and opportunities to develop knowledge, self-sufficiency and achieve inclusion in **decision-making processes**



Da alcuni anni a chiusura voglia presentare un progetto di ricerca in ambito europeo, viene chiesto di ripetere i principi della Ricerca e Innovazione Responsabili (RRI), anticipando i possibili impatti e spiegando come le attività proposte produrranno un'innovazione "socialmente desiderabile e accettabile".

Apertura della scienza, riflessività, coinvolgimento pubblico, etica, prospettiva di genere, sostenibilità, giustizia sociale, sono alcune delle traiettorie che dovrebbero ispirare la ricerca "responsabile".

Ma cosa è la RRI per i ricercatori? È l'ennesimo vincolo burocratico cui devono sottoporsi le proprie attività o può essere un'occasione per ripensare il modo e il senso di fare ricerca oggi?

"Scienziati in affanno" esplora i vari significati di questo termine complesso, attraverso le sue componenti teoriche e le riflessioni maturate nell'ambito di alcune pratiche di ricerca fuori e dentro l'accademia e il contesto della politica comunitaria.



Declinare la responsabilità nelle pratiche: riflessioni dentro e fuori la RRI

Fablab e Makerspace: costruire l'innovazione fuori dall'accademia

Zoe Romano

WeMake, Milano¹

DOI: 10.26324/2018RRICNRBOOK15

Mary Anning ha vissuto nella prima metà dell'800, trascorrendo molta parte del suo tempo a raccogliere fossili sulle spiagge di Lyme Regis, in Inghilterra. Le coste di Dorset, la contea di cui fa parte la cittadina, sono parte della Costa Giurassica, chiamata così da quando è diventata sito Unesco patrimonio dell'umanità proprio perché i suoi terreni coprono un periodo storico di circa 185 milioni di anni e sono ricchi di reperti archeologici che hanno contribuito allo sviluppo della paleontologia contemporanea. Mary Anning è da molti considerata la prima *citizen scientist* della storia e le sue vicende, raccontate in un libro intitolato *The Fossil Hunter* (Cacciatrice di fossili), ci mostrano come, nonostante fosse completamente autodidatta e al

fablab
open science
makerspace
co-design
citizenscience
open care
opensource

115

A causa delle sue origini non altolate, della poca istruzione, del genere femminile che rappresentava, e nonostante avesse una grande conoscenza della geologia e dell'anatomia, costruite sul campo nella pratica quotidiana della raccolta dei fossili, non fu mai accettata nel contesto della scienza vittoriana, in una società che ancora non prevedeva il voto né tantomeno la frequentazione universitaria alle donne. Solo quasi cento anni dopo, dal 1904, la Geological Society ha iniziato ad accettare le donne tra i suoi membri.

Bisognerà aspettare altri cento anni ed arrivare fino al 2005 per vedere un cambiamento più radicale, e assistere all'apertura e democratizzazione di tali pratiche nel contesto dei *maker*.

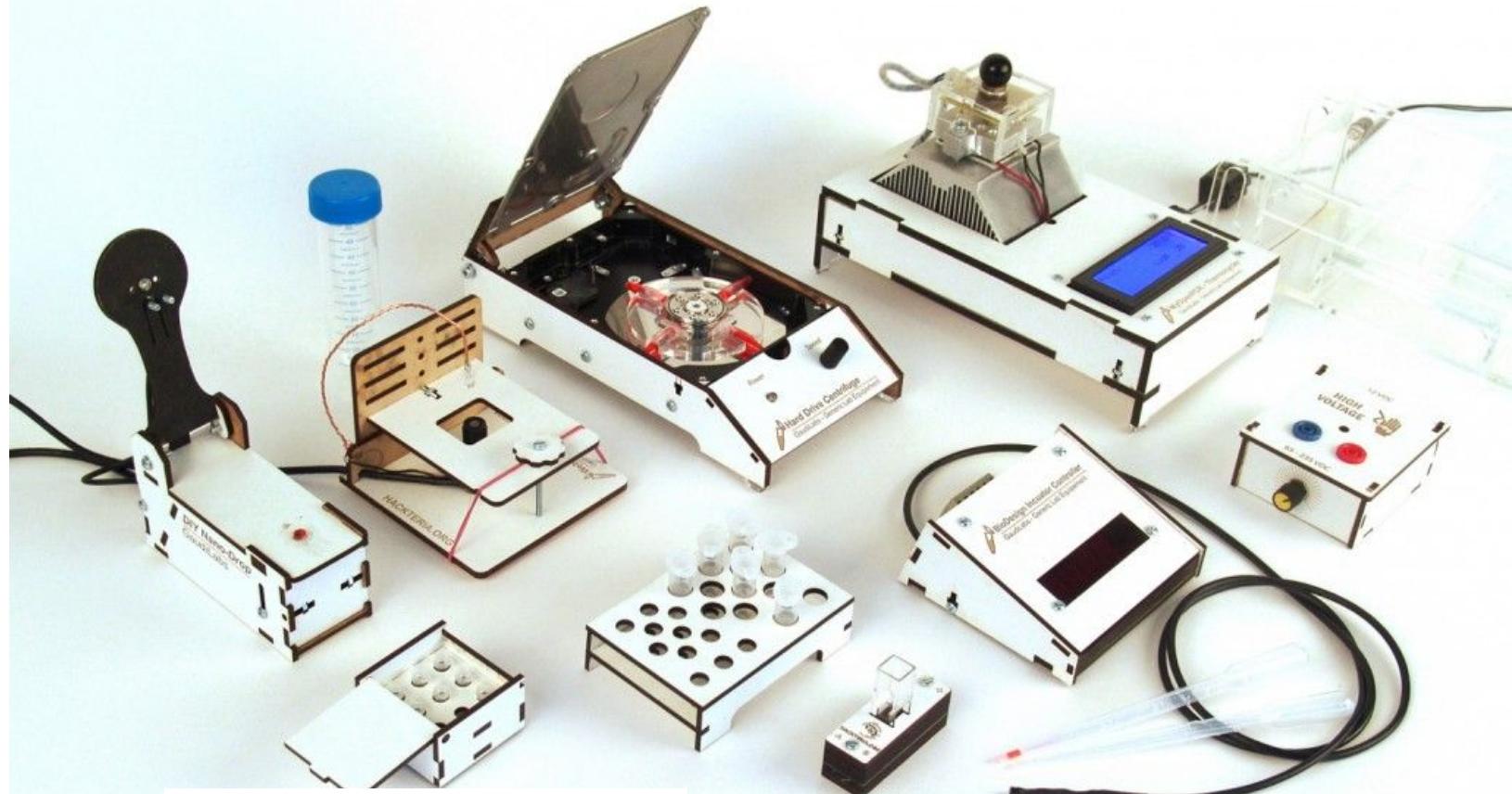
Social tech / Civic tech

Fablab and Makerspace are spaces of activation and transformation where digital manufacturing technologies are socialized, becoming the tools around which different communities interact to build the world we want to inhabit through a collective path between online and offline, creating bridges of virtuous relationship between the world of research and citizens.

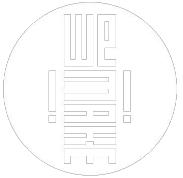
The National Research Council is the largest research council in Italy. As a public organisation, its remit is to support scientific and technological research. Founded in 1923.







Open hardware Lab



<http://wemake.cc/digitalsocial/cure-ribelli/>

<https://wemake.cc/digitalsocial/>

OPEN SOURCE MEDICAL DEVICES

A VISUAL GUIDE FOR MAKERS

An introduction to the regulations to design, commercialize and distribute an open source medical device in EU

STEP ONE

UNDERSTAND WHAT YOU ARE RELEASING

Are you developing a hardware device or a digital fabricated solution to solve a challenge in the field of health and care? Not all the solutions need to be certified as medical devices. Identify which scenario your solution belongs to.

SCENARIO A

Your solution is a functioning DIY prototype. People can access the documentation to physically produce and use it for themselves, to test, improve or study it.

SCENARIO B

Your solution can be personalized and produced in a fablab or a makerspace to support real people's needs.

SCENARIO C

Your solution is a hack of an existing object or medical device.

SCENARIO D

You are self-producing a solution for one person, or a few people, who will get it directly from you to use it in their daily life.

SCENARIO E

Your solution can be batch-produced or manufactured in small scale and distributed by a third party, like a non-profit organization, a 'non for good' company or by your future social enterprise.

WHAT SHOULD YOU DO?

Document the solution clearly and do not forget to add some information regarding what it should be improved to make it more stable.

SFF EXAMPLES ON CAREABLES.ORG

Do not forget to add information about the safety and the results of testing sessions into the documentation. Make people aware about possible risks when using the solution.

Make people aware that the hacked version of a medical device is not suitable for all.

SFF INITIATIVE HACKABILITY.IT

You are responsible for your designs. Reflect on how to avoid risks for the people.

Be sure that the requirements for the EU regulation compliance are considered in the design and development process of your solution.

YOU PROJECT NEEDS THE CERTIFICATION!

GO TO STEP TWO

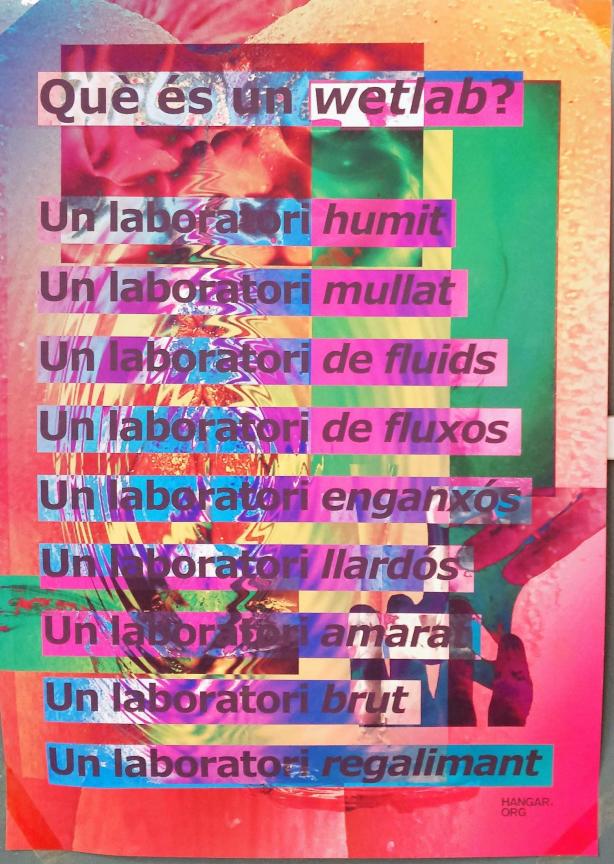
STEP TWO

UNDERSTAND THE MEDICAL PURPOSE

To start the certification procedure you should identify what category your medical device belongs to. Look at the following medical purposes to work out what type of medical device you are working with.

The guide aims to provide communities with easy-to-read documentation that accompanies step-by-step from a prototype of an open care device, to a product that can be compliant with regulations and, therefore, ready to enter the market.

EN and IT



Què és un wetlab?

Un laboratori *humit*

Un laboratori *mullat*

Un laboratori *de fluids*

Un laboratori *de fluxos*

Un laboratori *enganxós*

Un laboratori *llardós*

Un laboratori *amarat*

Un laboratori *brut*

Un laboratori *regalimant*

HANGAR.
ORG

I AM
ALREADY
QUIET
LAB

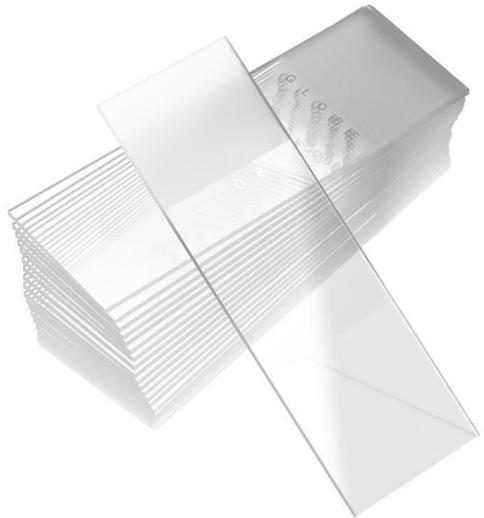


KNOWING THE TOOLS

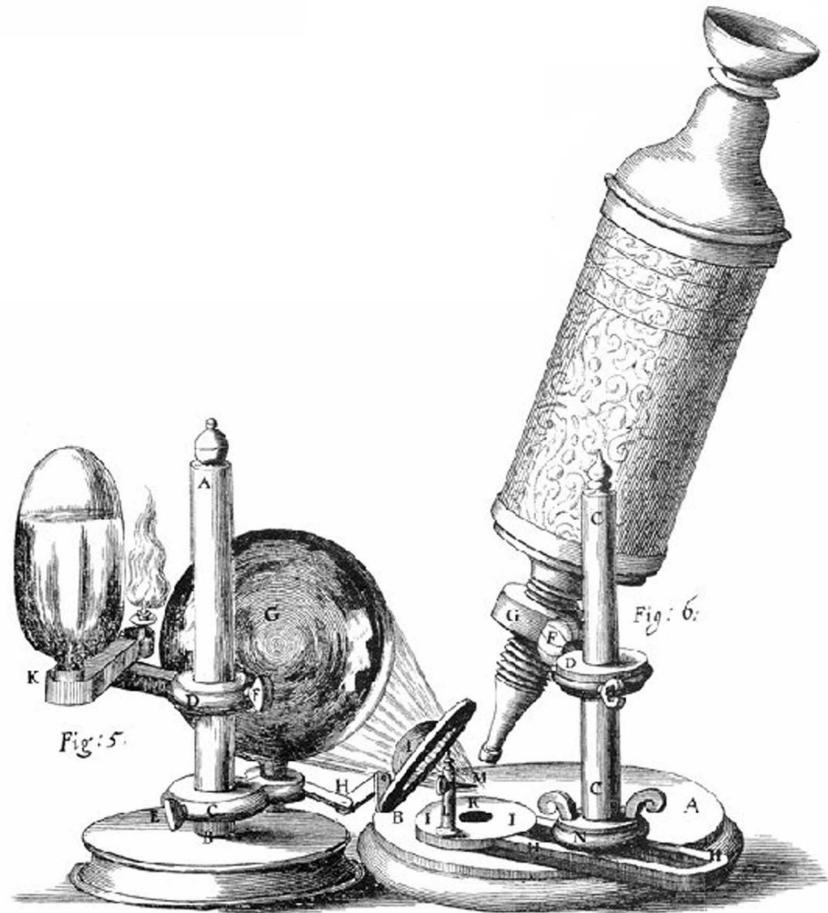
Microscope - Slide - Pipette - Centrifuge -

HANGAR.
ORG

TOOLS



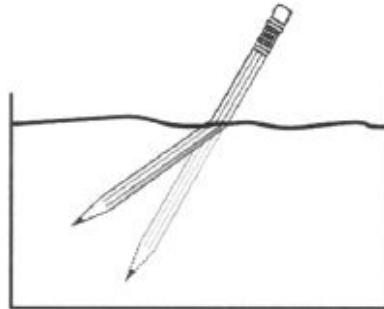
A bit of history



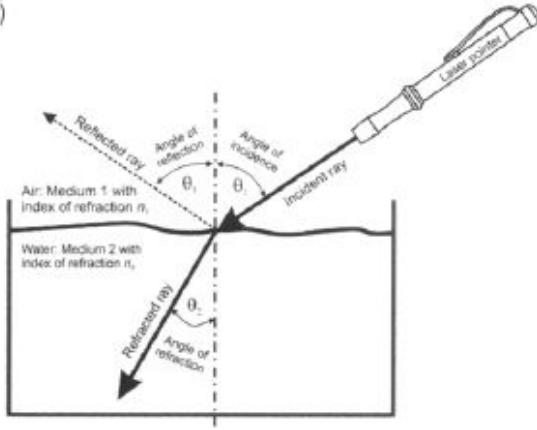
Tolomeo



(a)



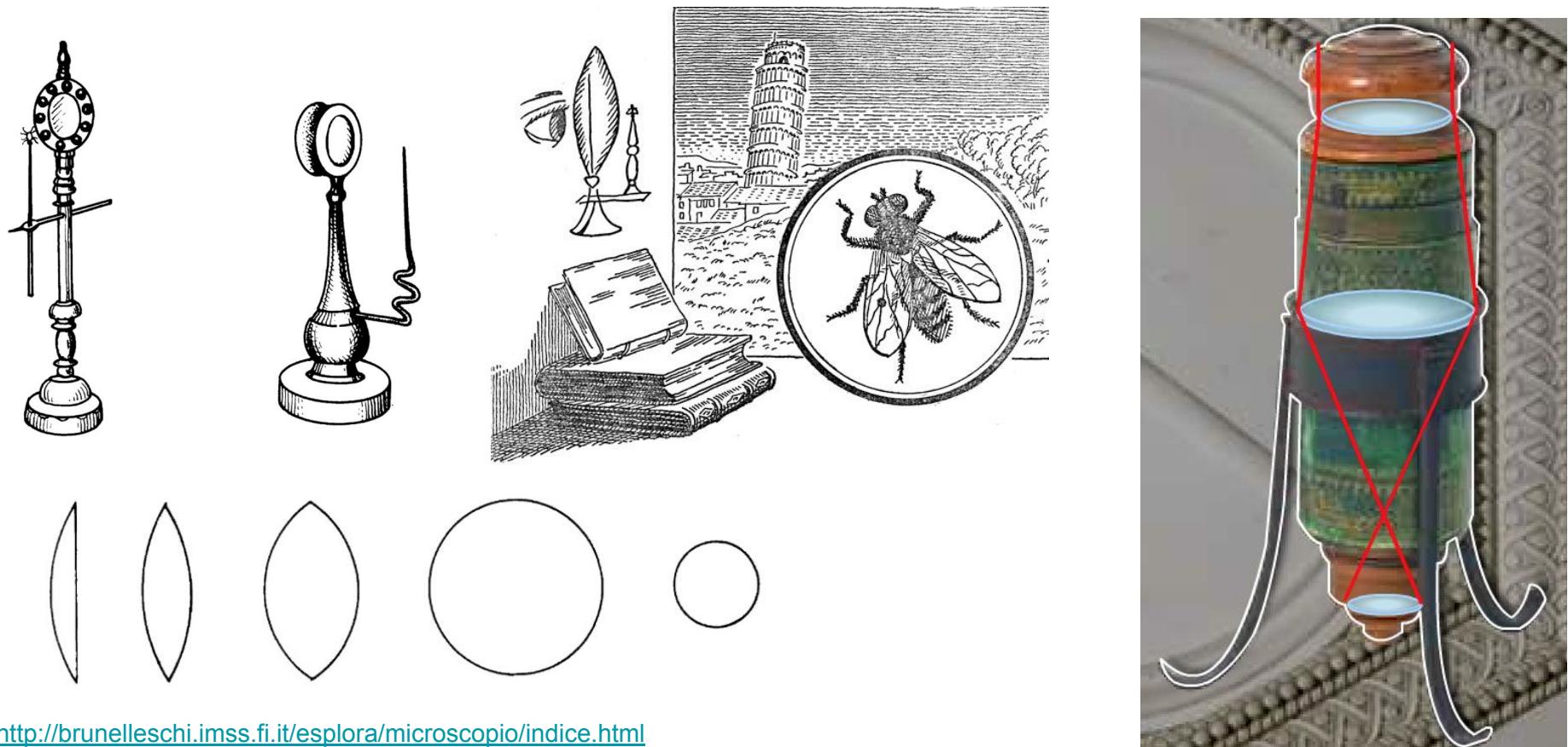
(b)



circa 100–165 D.C.

refraction

Vitra pulicaria and occhiolino



MICROGRAPHIA:

OR SOME

Physiological Descriptions

OF

MINUTE BODIES

MADE BY

MAGNIFYING GLASSES.

WITH

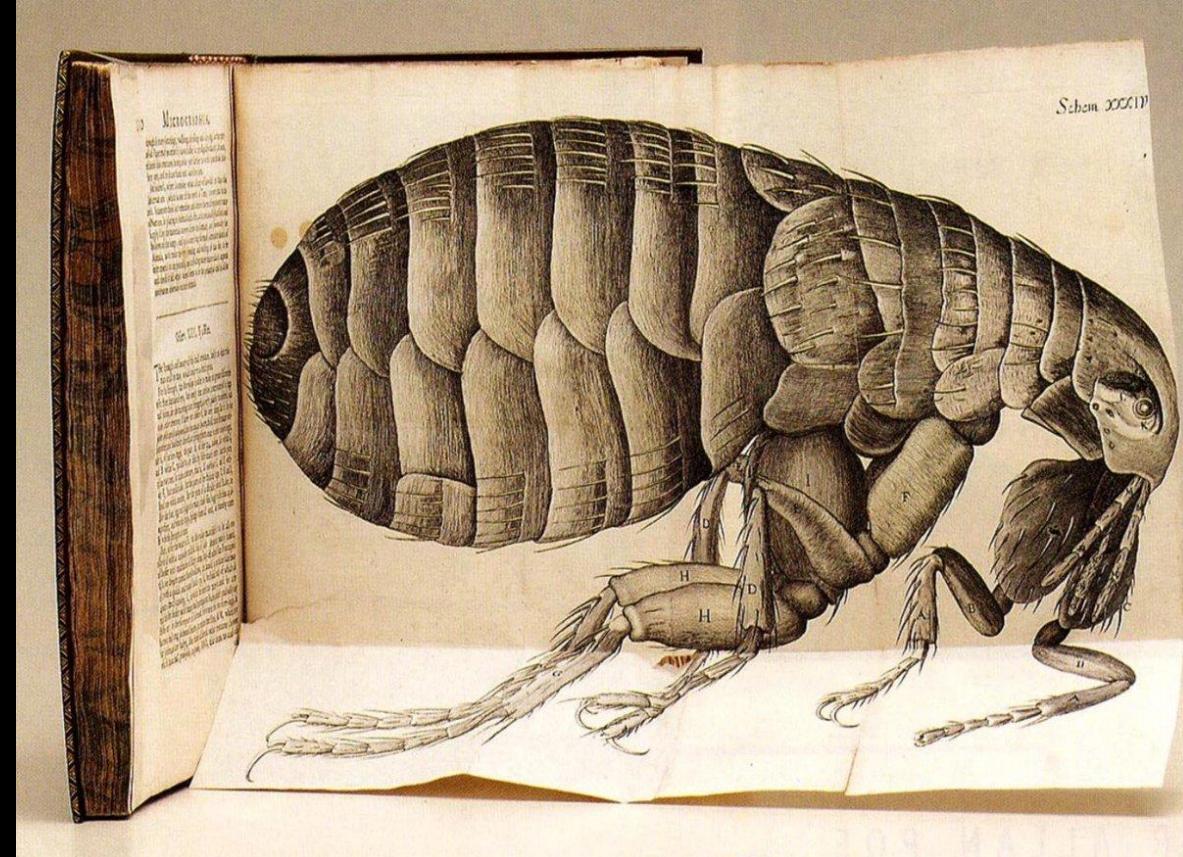
OBSERVATIONS and INQUIRIES thereupon.

By R. HOOKE, Fellow of the ROYAL SOCIETY.

*Non possum oculo quantum contendere Linceus,
Non tamen idcirco contemnas Lippus inungi.* Horat. Ep. lib. 1.

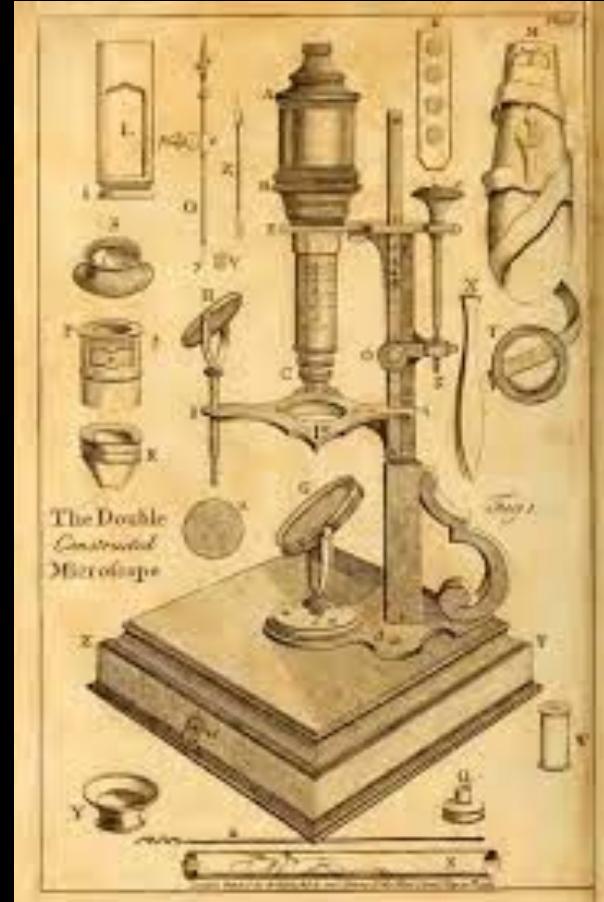
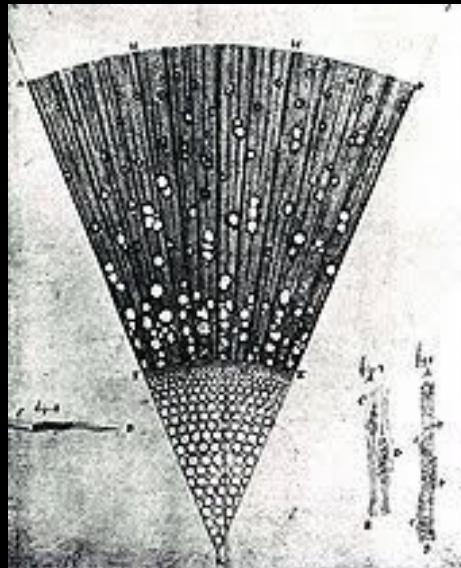


LONDON, Printed by Jo. Martyn, and Ja. Allestry, Printers to the
ROYAL SOCIETY, and are to be sold at their Shop at the Bell in
St. Paul's Church-yard. M D C L X V.



Royal Society Publication 1664
Plague in London 1665
Flea -> Plague 1898

Robert Hooke
1635 - 1703

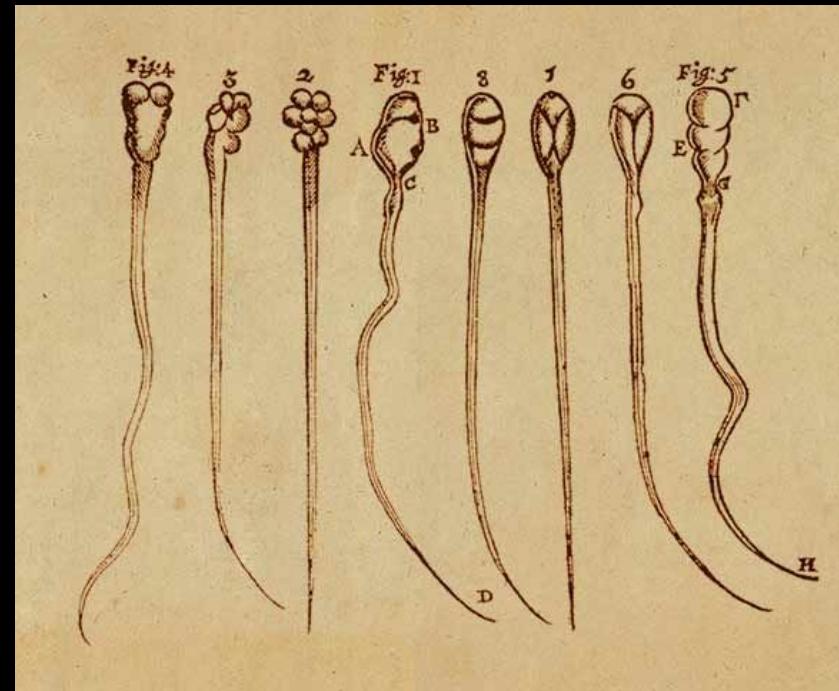
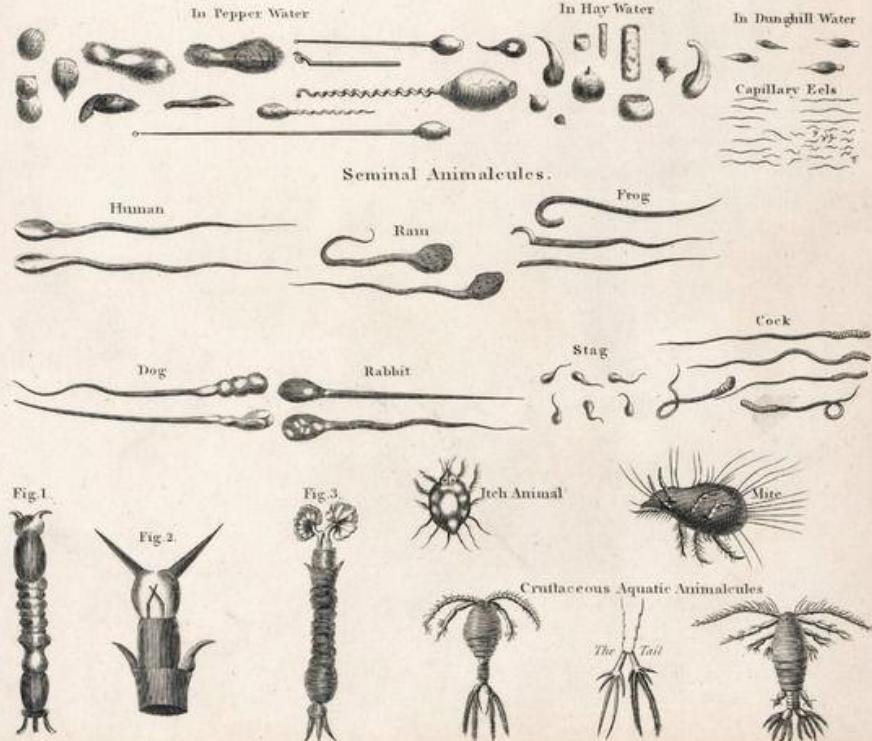


Antoni van Leeuwenhoek

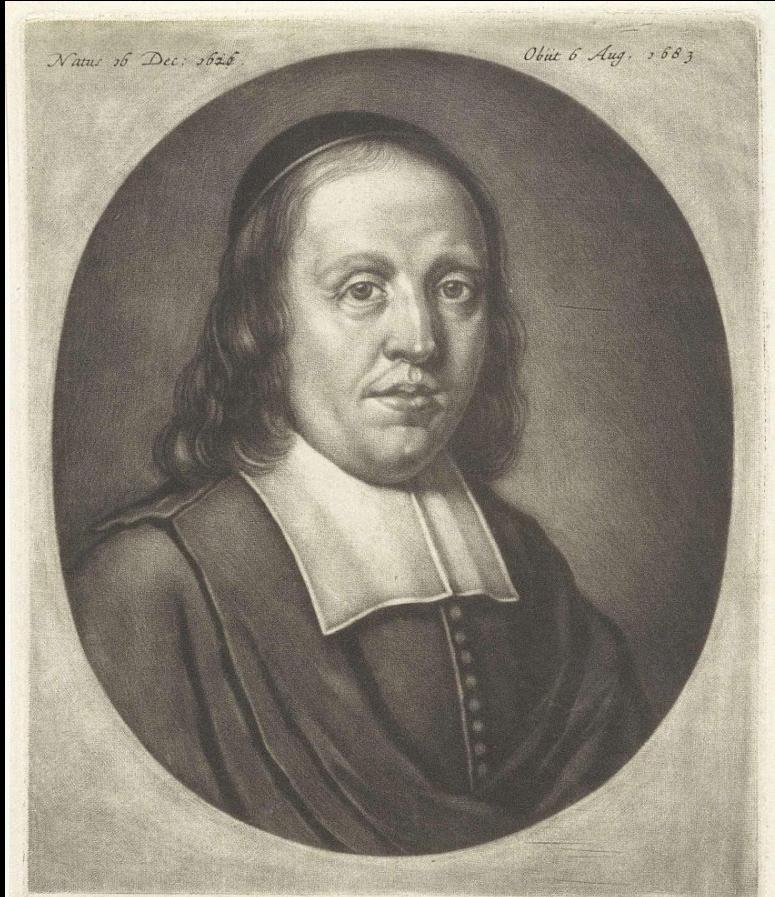
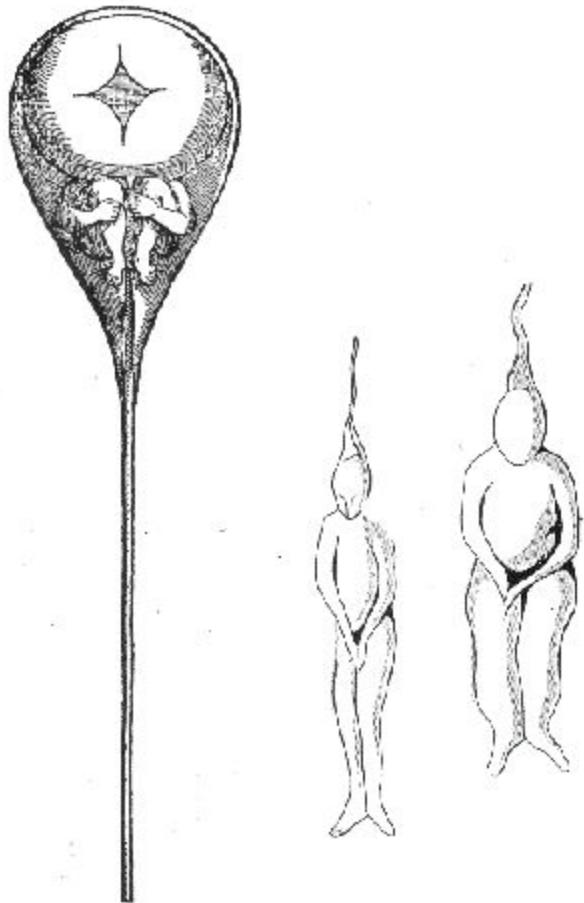
1632 - 1723

ANIMALCULES.

Animalcula infusoria.



Antoni van Leeuwenhoek



Nicolaas Hartsoeker | 1656-1725



MARGARET DUTCHESS OF NEWCASTLE.

Coming from a wealthy family, she owned several microscopes and was not shy about criticizing the work of the members of the Royal Society.

She was the first woman to visit the Royal Society and scared them.

“Artificial instruments seemed to distort the very reality they were designed to reveal Cavendish's motivation is important: she was not arguing against scientific enquiry per se; rather, she was deeply troubled by the uncritical enthusiasm for enquiry based on artifice.”

<https://royalsocietypublishing.org/doi/10.1098/rsnr.2014.0015>

**Margaret Cavendish -
1623 - 1673**

KNOWING THE PROCESS

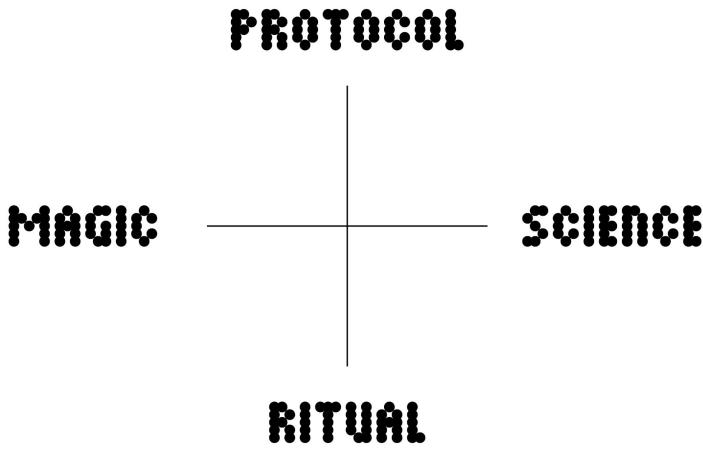
Protocols

KNOWING THE PROCESS
Protocols

WHAT IS A PROTOCOL

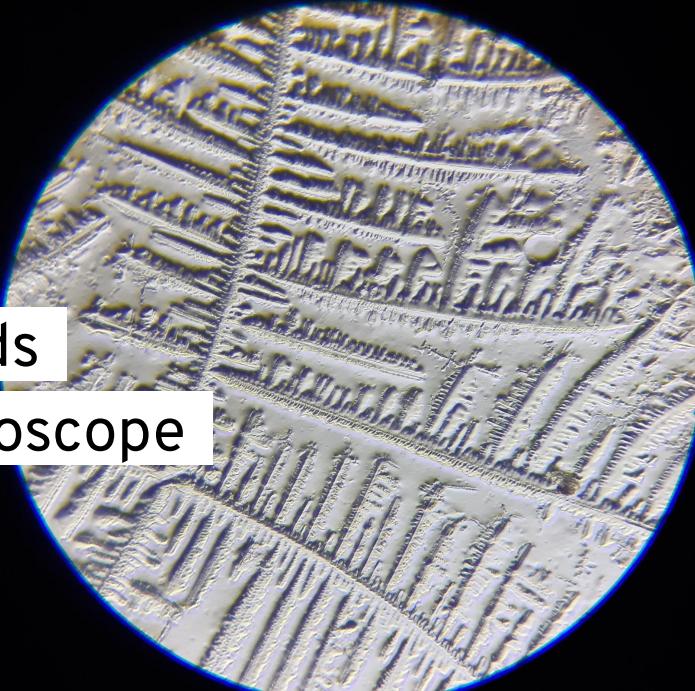
In natural and social science research, a protocol is most commonly a **predefined procedural method** in the design and implementation of an **experiment**.

Protocols are written whenever it is desirable to **standardize a laboratory method** to ensure successful **replication** of results by others in the same laboratory or by other laboratories.



These ancient healers believed that supernatural forces caused disease and that a special priest or medicine man was required to rid those afflicted of these unseen yet potentially lethal forces.

The origins of medicine and magic are entwined.



Perturbant Fluids
Tears under the Microscope





Tears
in the last 200 years

Timeline

1791

The first report on the crystallization in vitro was published by French scientists Antoin-François de Fourcroy and Louis-Nicolas Vauquelin. The solid residue of **desiccated tear** was determined to be cubic crystals with the same properties as sea salt.

1946

150 years later gynecologist **Papanicolaou** rediscovered the same phenomenon in the vaginal and cervix uterine mucus studied a vaginal smear, observed the **fernning phenomenon** in the **cervix mucus, and proposed using the arborization pattern to identify the ovulation period**

Timeline

- 1955 Solé, an Austrian scientist, reported that a little drop of blood serum, cerebrospinal fluid, milk, aqueous humor, or tear, if dried in a normal room environment produces a crystallized picture, which he called a **stagogramm**, from the Greek *stagón* (drop) and *grámma* (picture)
- 1984 **Rolando**, from Italy, designed a practical classification of four types of ferning, according to their density

Tears - sampling



1. **Basal** tears are always in our eyes to serve the purpose of lubricating, nourishing and protecting the eyes.
2. **Reflex** tears are those that form to protect our eyes from irritants including wind, smoke, tear gas, etc. They wash away debris when it enters the eyes and help fight bacteria to prevent infections.
3. **Emotional** tears are those that are produced as a result of different types of emotions.

Tears: a cocktail of components



Tear comprises **98.2%** water, the entire focus of tear diagnostics is on the remaining 2%

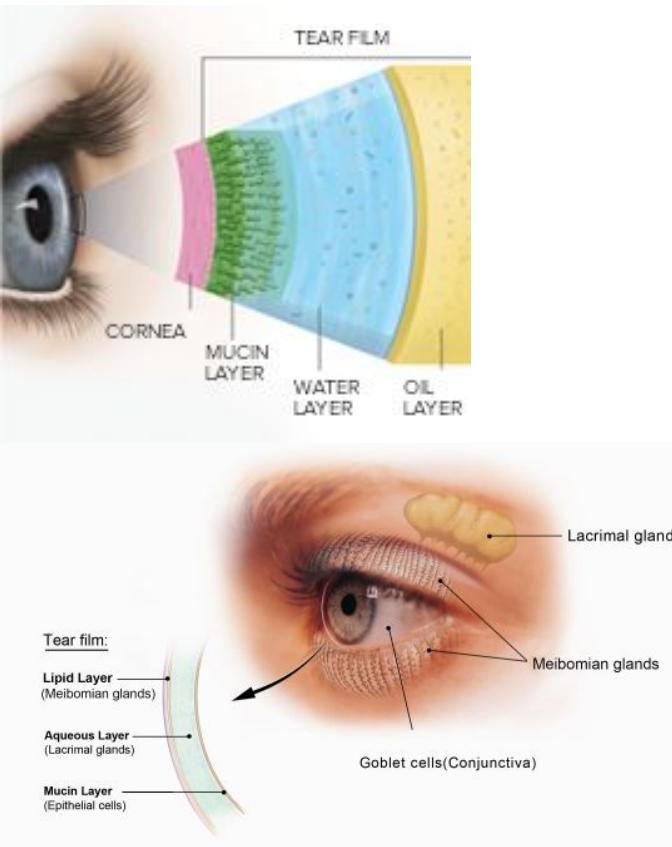


Human tear fluid is a complex mixture containing over **1500** solute proteins, lipids, electrolytes, mucins, metabolites, hormones and foreign substances.

The tear film is a thin fluid layer $3 \mu\text{m}$ thick and $3 \mu\text{l}$ in volume that covers the outer mucosal surfaces of the eye

Many proteins belong to the immune system, involved in immune response, in inflammatory response; defence against pathogens.

Tears - layers

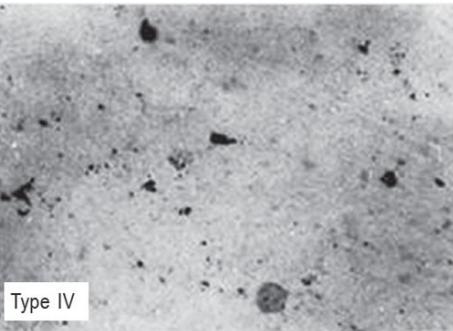
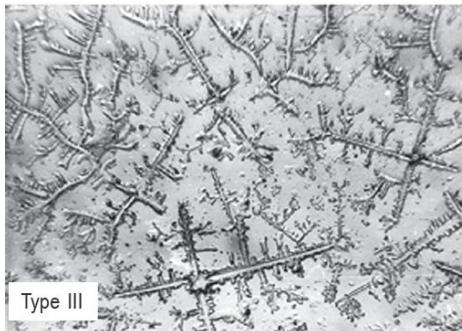


1. External lipid layer: The main role of this outermost layer (50–100 nm thick) is to reduce evaporation of our natural tears and keep tears from spilling out of the eye (Meibomian glands).

2. Middle aqueous layer: This middle layer is comprised of water and aids in lubricating the eye, washing away particles, preventing infection and providing oxygen and nutrients to the underlying corneal tissue. (Lacrimal Glands)

3 . Inner mucin layer: allows the watery layer to spread evenly over the surface of the eye along with acting as an anchor to hold the tear film in place thanks to its hydrophilic glyco-proteins.

Rolando's Classification



Type I

compact ferning without intermediate spaces;

Type II

noncompact ferning, fewer arborizations, and some spaces among fernings;

Type III

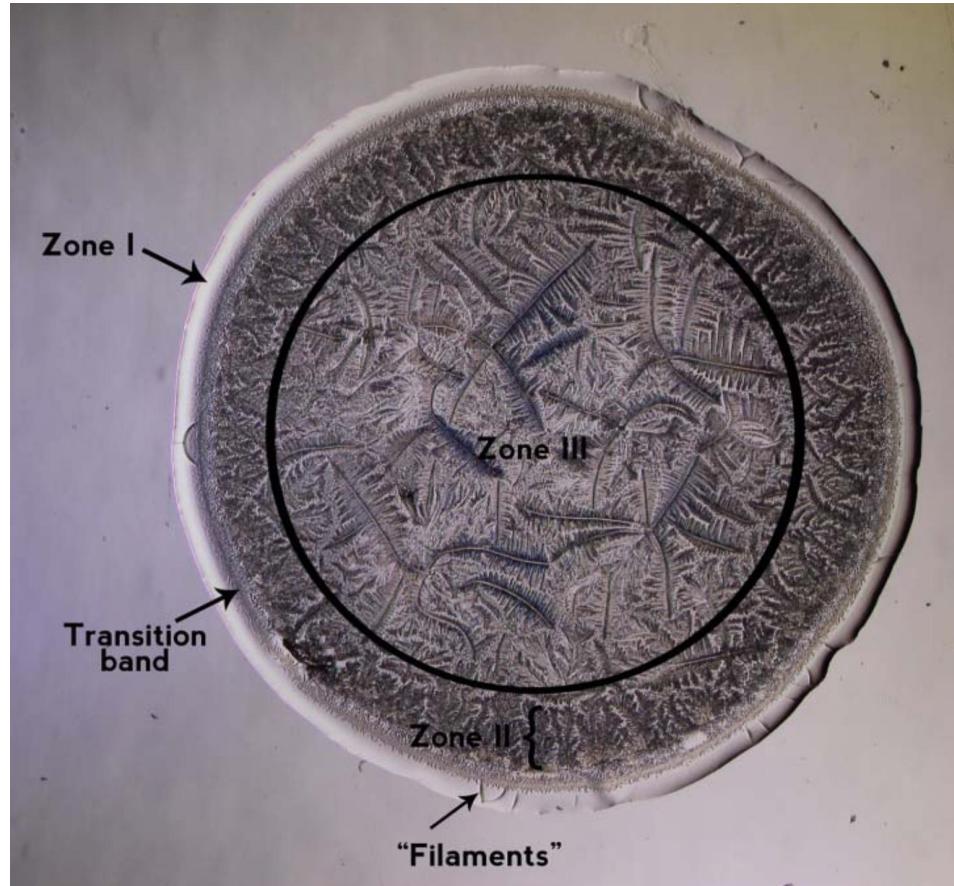
scarce and small fernings, separated by abundant amorphous spaces, including amorphous mucin conglomerates;

Type IV

no fernings or crystallization.

Types I and II are normal. Types III and IV express increasing grades of hypertonicity of tears

Tear's Zones



Tear microdesiccates display 4 distinctive morphological domains

Zone I

it's a lipid-rich structure

Zone II

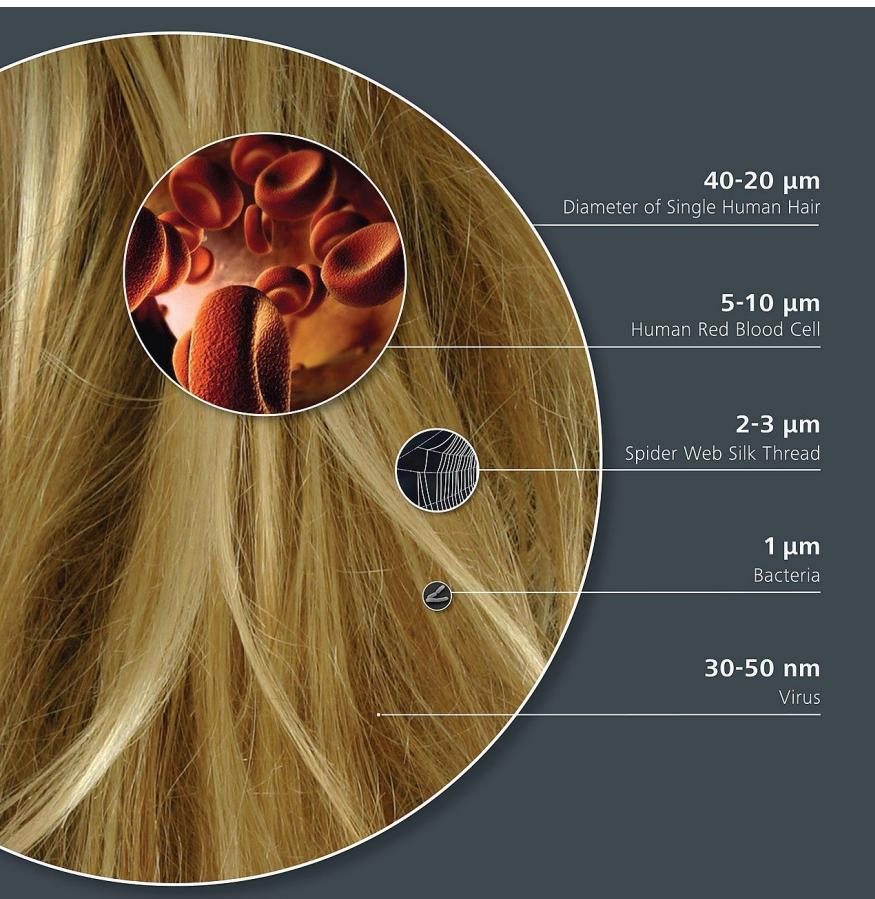
consists of a regular mass of fern-shaped or leaf-shaped crystalloids emerging centripetally from regularly spaced points near zone I

Zone III

the centermost part of the micro-desiccate where fern-like structures differing in robustness, length, and branching can be typically seen

Transition band

Micro measurements



1 μm = 1 micrometer or micron

1mm = 1000 micrometer

1 nm = 1 nanometer

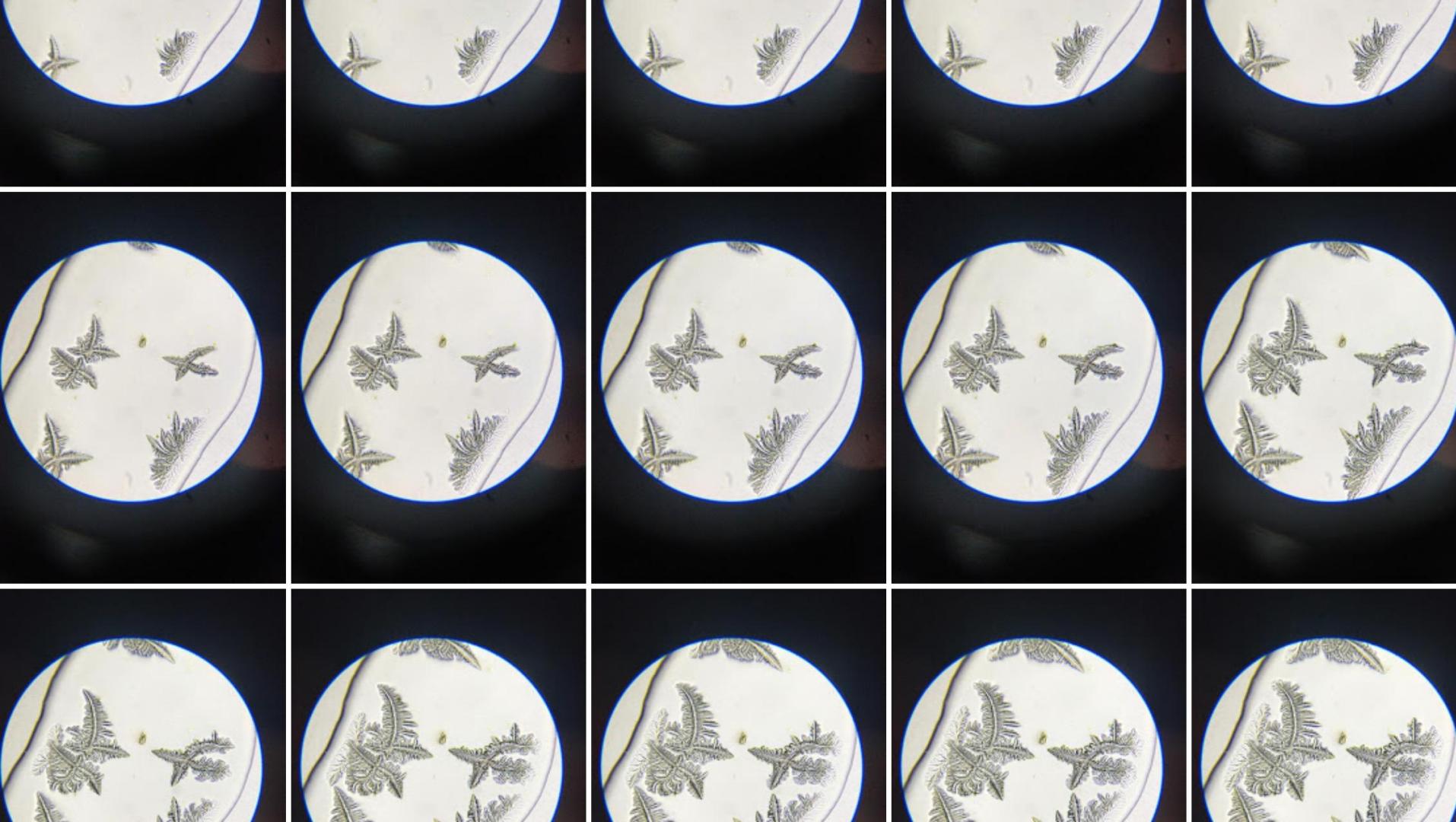
1 nm = 1000 μm

1 μl = 1 microliter

1ml = 1000 microliter

Protocol

- Step 1- divide in groups and test the use of microscope setting up our mobile phone on 3d printed holder (try to take pictures and use timelapse function - set camera with hi-resolution)
- Step 2 - Collect tear sample
-
- Step 3 - Put 1 μ l of tear on slide using graduated Pipette
- Step 4 - Record cristallisation with timelapse and take some pictures
- Step 5 - repeat for each member of your group
- Step 6 - compare media and find differences using parameters on Tear Zones and Rolando classification



Instagram

Search



obot

Edit Profile



107 posts

137 followers

89 following

Our Bodies Our Tech

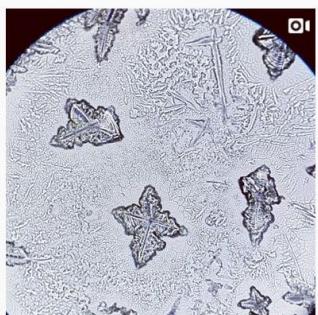
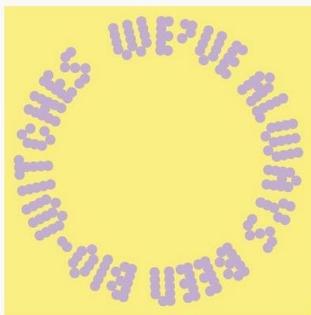
linktr.ee/ourbodiesourtech

POSTS

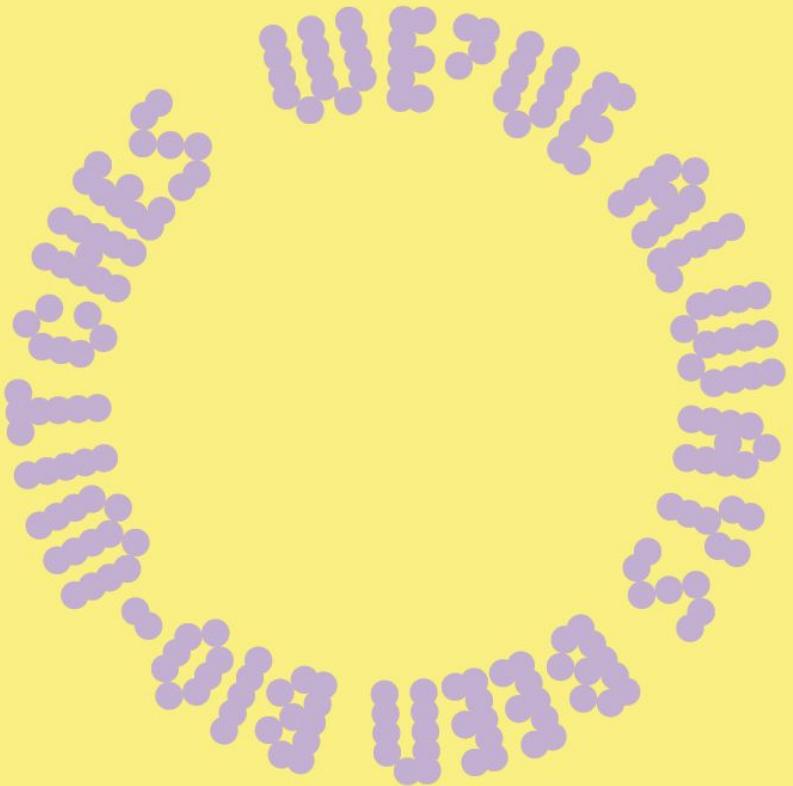
IGTV

SAVED

TAGGED



WE'RE
BIRTHING
A
NEW
WORLD

The graphic consists of a circle of purple dots. The dots are arranged in a way that forms the words "WE'RE", "BIRTHING", "A", "NEW", and "WORLD". The dots are light purple and have a slight shadow, giving them a 3D appearance.

GRAZIE
GRACIAS
GRÀCIES
THANK YOU

@_obot_
@_zoescopel

kinlab.it
zoeromano.eu