

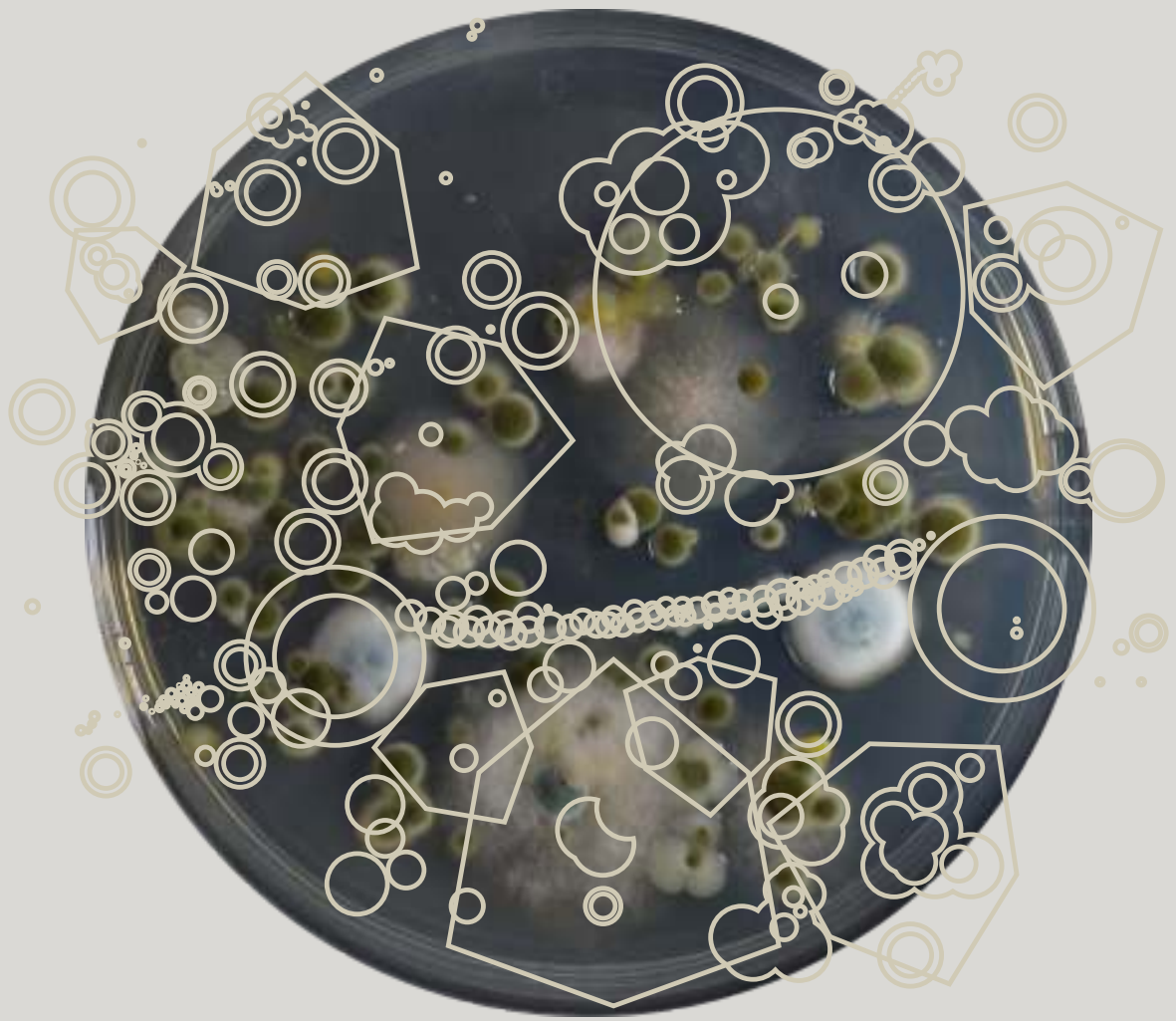


S O P H Y

V I N I

A U
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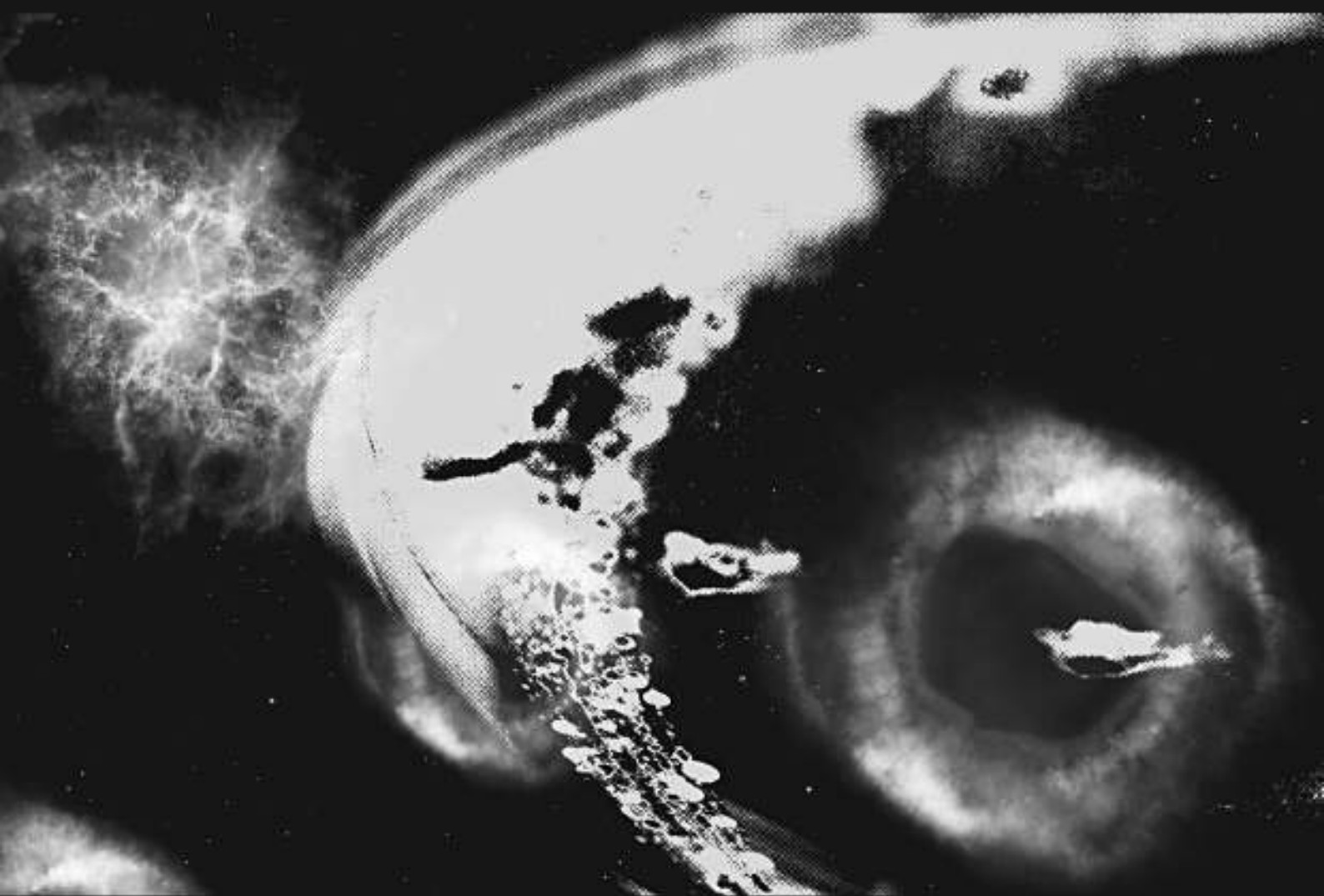






This project aims to present an alternative portrayal of my **family members**. The final outcome takes its form through the microbes cultivated in **petri dishes** where the sample was taken from my family's **fingerlips**. As a high school student I was overwhelmed by the life created in petri dishes during Biology class. Consequently, I decided to conduct by myself a microbial culture and shoot macro-photos of it. Amongst them, the most distinctive sample was the one of my pet **iguana** which I consider as an equal member of my family. Its skin patterns were also used as a texture for the cover and back cover of my project's book to reflect the strong bonds created in living systems, the change and spontaneous evolution.

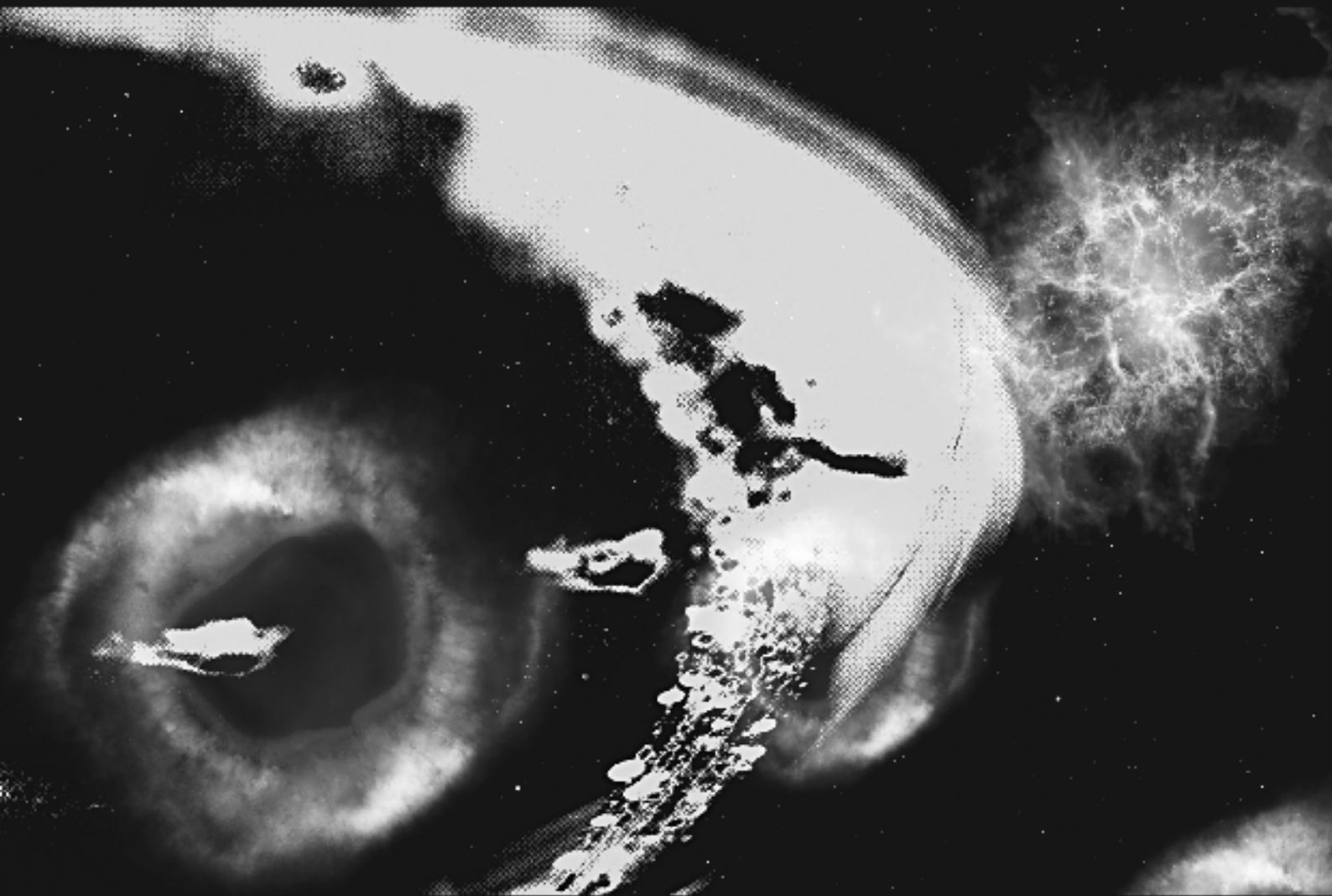
The title chosen for this project is '**Aurum**' which in Latin means 'gold' and it is placed in a rectangular frame as the elements are placed in the periodic table. Gold's connection with change, equivalent exchange, evolution etc. is stemming from alchemic theories, where alchemists were dedicated to turn every material into gold, therefore to find the elixir of *life*.



CH.1

ARCHE

[introduction]



'In the beginning there was nothing, nothing but the silence of the infinite darkness. The breath of the Creator flooded against the face of the void whispering "Let there be light!" and light was, and it was good.'

(Noah 2014)

The arche of everything, or else the origin of life, has always been a disturbing occurrence for humankind, arising ambiguous ideas. Are we the progeny of organic molecules, non-living matter, formless mass or a result of continuous evolution?

the gestation of
the WORLD /
[cosmogony]

In *Theogony*, as seen in Evelyn-White's version (2014), Hesiod interpreted chaos as the divine primordial condition, a moving formless mass from which *Cosmos and Gods* were originated. Therefore, Chaos is the "ζωσαν ουσίαν" - the living matter, the origin of everything.

Subsequently, according to Anaximander (Dancy 1989), *apeiron* was the main cosmological arche, something eternal and infinite that faces no decay and which perpetually yields fresh materials. In the bowels of *apeiron*, the opposites of hot-cold, wet-dry etc. were generated, which were the triggers of the creation of the World.

We should also consider, *biopoiesis* (βίος - bios = life + ποιῆν - poiēin = make) which in the life sciences is an explanation regarding the origin of life. This specific hypothesis has its roots back in the early decades of the 20th century, where Aleksandr Oparin and John Haldane suggested that Earth's condition, at the time when life arose, was tremendously different from the modern environment. In this way Oparin suggested that the organic compounds could have undergone a series of reactions, creating a complex organic - carbon containing molecules, some of which were able to replicate themselves. On the other hand, Haldane, proposed that the primordial sea worked as a vast chemical laboratory powered by solar energy (Pontarotti 2012).

Ipso facto, Timaeus in Zeyl's version (2008) said that the Creator formed the World in the resemblance of a living being, bestowing upon it the most ideal of all shapes, that of a sphere which includes inside it all the other shapes. This creature had no need for eyes neither for ears, as there was nothing outside to be seen or heard. Furthermore, the spherical entity had no

need to seek for nourishment as it was fed from its own wasting (32a - 34c).

Consequently, Timaeus dicta gestated new ideas regarding the origin of life, such as: non-perishability, ouroboros, cycle of life.

ἄπειρος
[apeiros]

ἄπειρον / α-α =
without
&
πειρα-peirar =
end, limit

the unexperienced

the unlimited





m o

A



CH.2

r p h o l o g y o f t h e

MORPHOUS

predominant REGIMES

A dictionary definition of **chaos** is: a state of utter confusion or disorder; a total lack of organisation.

Chaos and **Order** are viewed as primordial antagonists according to scientists and philosophers and thus, their terms require further analysis.

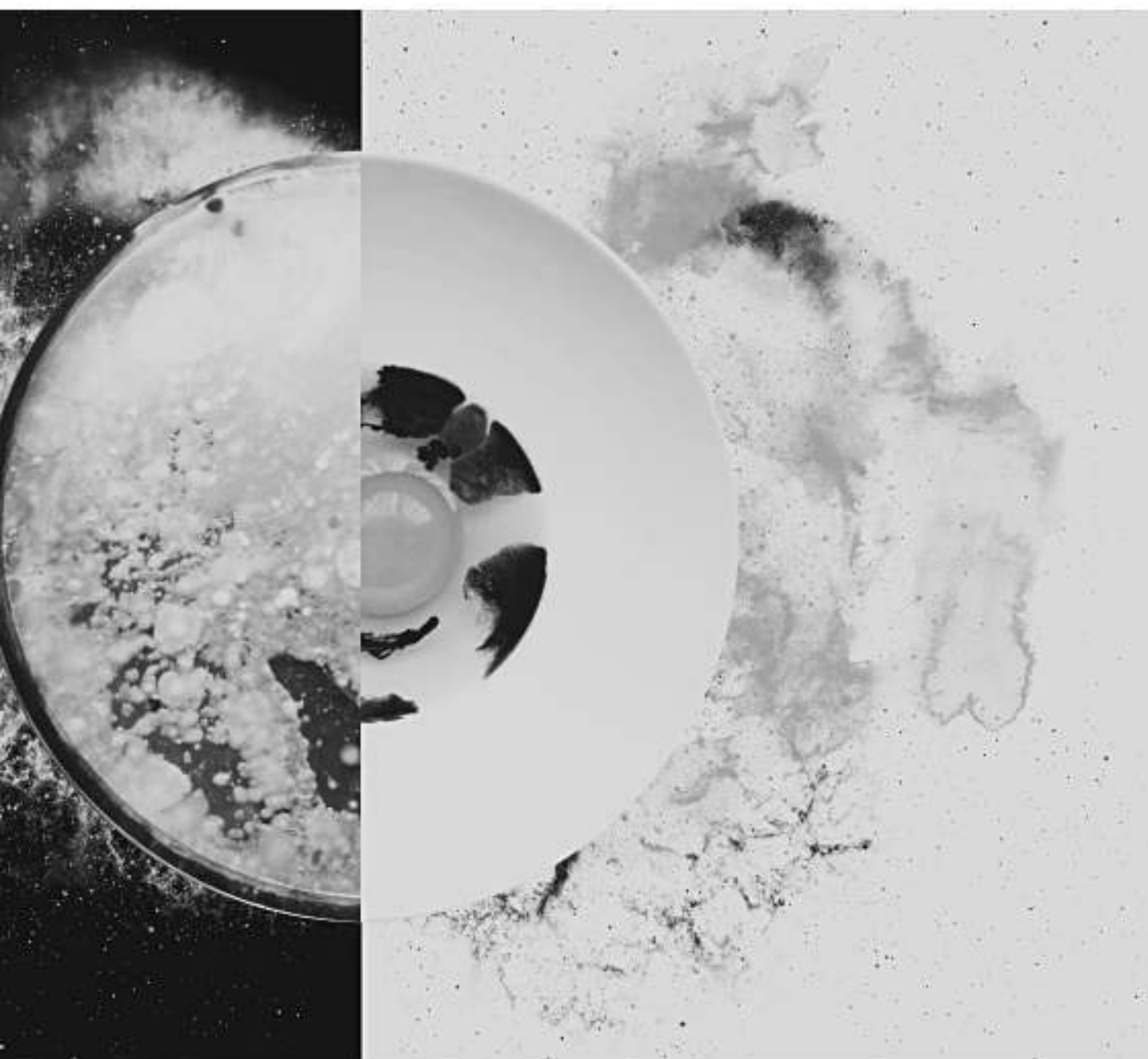
Stuart Kauffman (1993) in his work '*Origin of the Order: Self-organisation and evolution*' posed a striking theory. First and foremost, any scientific researches on chaos are relatively new; **Diacu and Holmes** (1996) studied the **Poincare's** suggestion regarding the orbital motion of three celestial bodies. Those bodies, mutually, exerted gravitational forces to each other (Peitgen 2004). Hence, until then there were two dominant regimes, the **chaos regime** and the **order regime**. **Kauffman** (1990, p. 303), thereupon, added a **third regime**, a transition zone lying between them, which was "razorblade thin".

Within the tint of the two regimes, **Kauffman** (1990) observed that the systems that are placed close to the regime's boundaries tend to evolve by successive minor variations and are drastically altered, unable to accumulate minor variations, respectively. On the other side of the spectrum, systems that are poised in the order regime are achieving minor variations whilst they manage to adapt too slowly. In the chaotic regime, alternations are rigorous and harsh and possibly harmful for the system. Therefore, to survive, those systems should co-exist and co-evolve.



CHAOS
regime





ORDER
regime

THIRD
regime

geometric

ORDER and CHAOS

'Why is geometry often described as 'cold' and 'dry'? One reason lies in its inability to describe the shape of a cloud, a mountain, a coastline, or a tree. Clouds are not spheres, coastlines are not circles, and bark is not smooth, nor does lightning travel in a straight line. [...] The existence of these patterns challenges us to study those forms that Euclid leaves aside as being 'formless', to investigate the morphology of the 'amorphous'.

(Mandelbrot 1982)

Since the beginning of human history, geometric order and chaos exist in all living and non-living entities, as evolution has shaped organisms based on the survival of the fittest.

It is relatively easy to distinguish between geometric order and chaos, but the definition of these concepts is difficult.

Rubinowicz (2000, p. 197) stated that geometric order is depicted by 'ideal mathematical forms' (in 2D: line, quarter, circle | in 3D: sphere, plane, cube) and 'ideal relationships' (parallelism, symmetry, rhythm). Chaos on the other hand, is the opposite of geometric order and it is represented by 'forms and relationships that are complex and difficult to be described with the language of classical mathematics'.

Complex indeed, but what if the chaotic is perfectly predictable? What if chaos is a condition in which nature fails to obey laws?



R A N D O M N E S S a n d D E T E R M I N I S M

'Nothing in nature is random. A thing appears random only through the incompleteness of knowledge.'

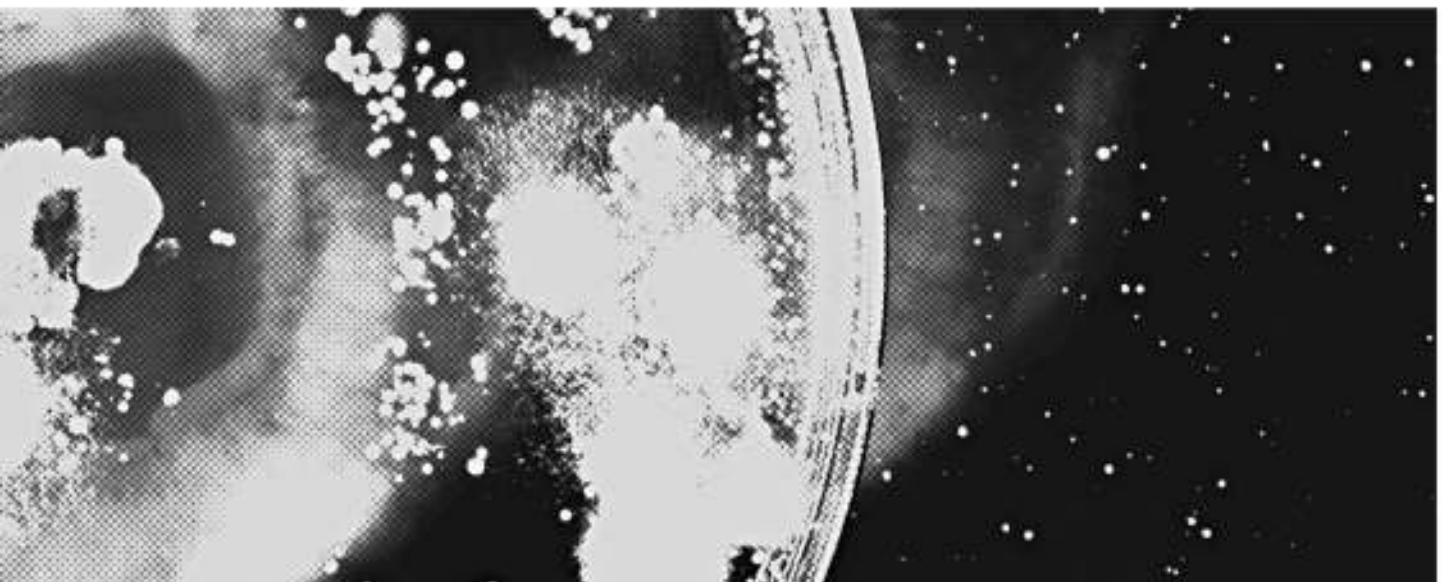
(Spinoza 1963)

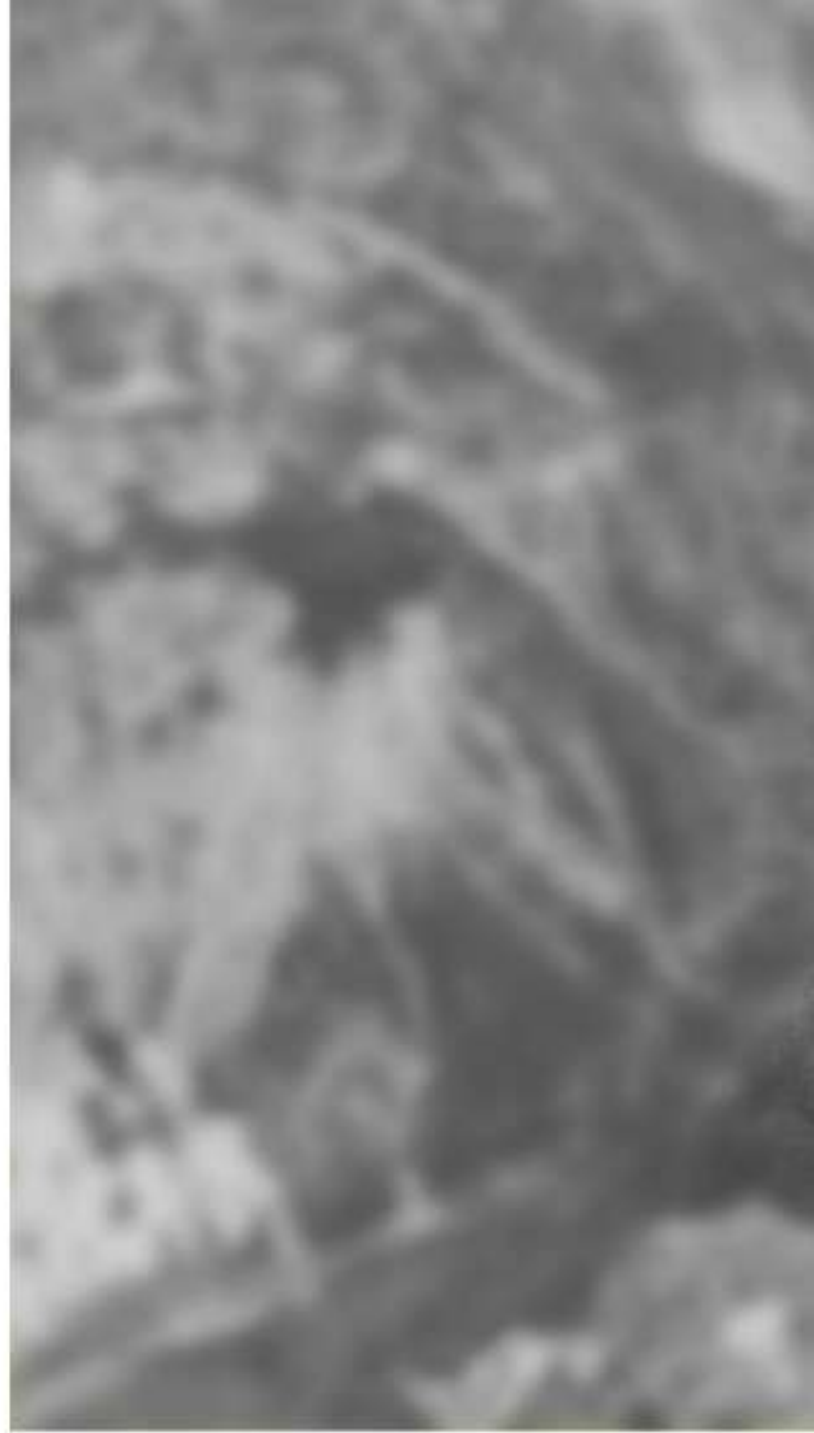
'Now that all comes to be, must needs be brought into being by some cause; for it is impossible for anything without cause to attain birth.'

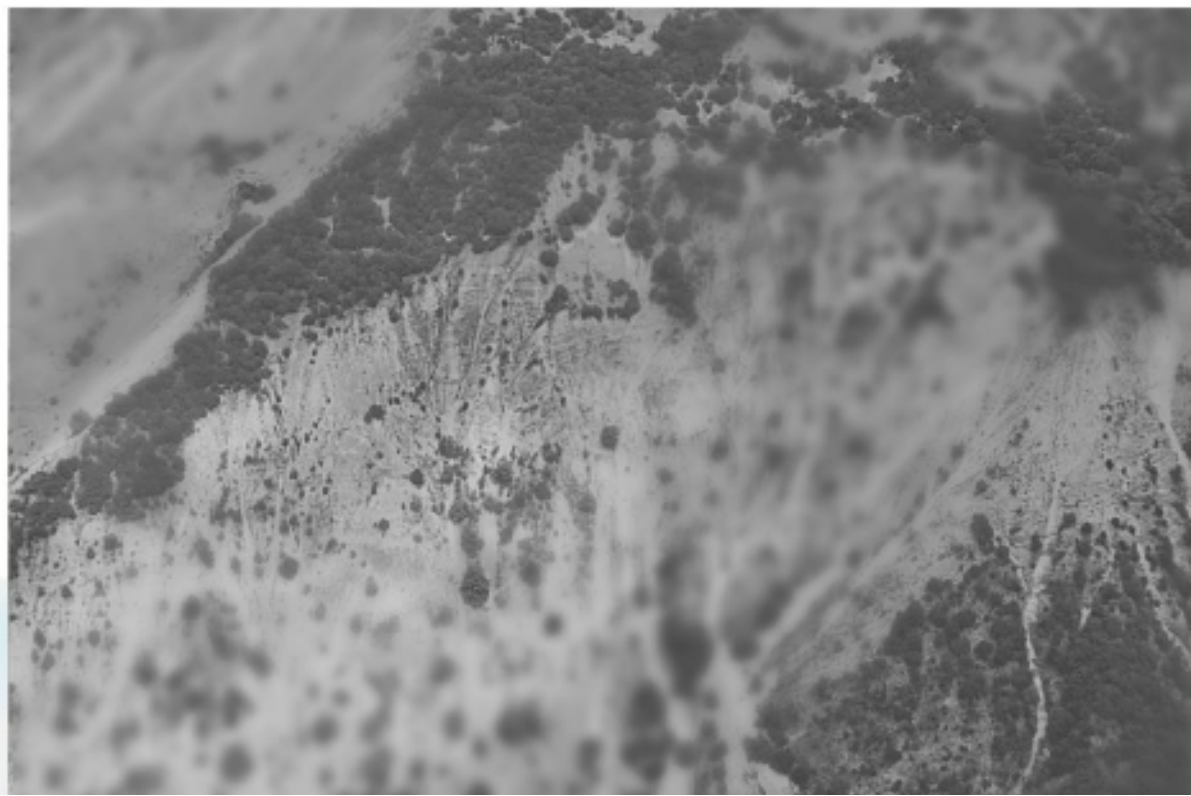
(Plato, trans. Zeyl 2008, 28c)

An equally significant aspect is our idea of randomness, especially with regard to our imagery, where structures and patterns are created randomly to look more or less arbitrary. The aforementioned idea stems from the chaos theory, summarized by Edward Lorenz (1995).

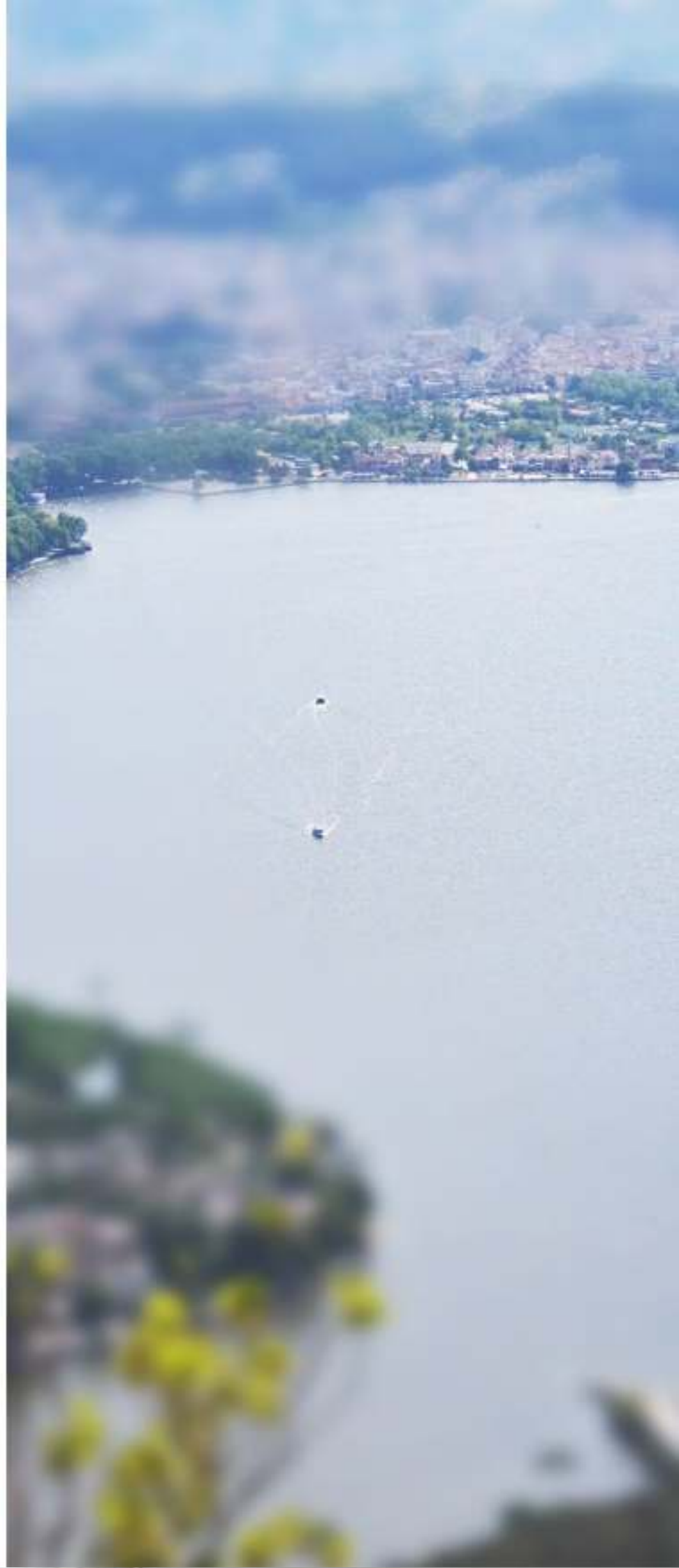
In other words, the mathematical theory of chaos developed since the '60s where according to Rubino-wicz (2000, p. 198) *'order is a special coincidence of a wider chaotic arrangement and chaos is a deterministic and non-scholastic phenomenon'*. However, the conceptual meaning of chaos has been differentiated these days, as it is the synonym of *ataxia* and the antonym of *order*.












CH.3

love for life
BIOPHILIA







'But we haven't time in this world of ours, to love things and see them at close range, in the plentitude of their smallness.'

(Gaston 1957, pg. 163)

There has always been a strong bond between Biology and Aesthetics. This theory stems from the **Biophilia hypothesis** as suggested by Wilson (1984). The term '*biophilia*' (βίος - *bios* = *life* + φίλια - *philia* = *friendship*) literally means '*love for life or living systems*'.

As a term it was first used by Fromm (1964) to describe the psychological necessity of being attracted to all that is alive and vital. Thereupon, Wilson (1984) defines biophilia as human natural tendency to affiliate with other forms of life.

To put it in other words, what Wilson says is a parallelism of the food chain that also applies to **Kauffman's** theory, where to survive, systems should co-exist. Undoubtedly, all living beings should respect one another, born and perish in a perpetual cycle.

In short, human brain evolved in a bio centric world, not a machine regulated world (Wilson 1993, p. 32) and thus, when are removed from the natural environment human become atrophied.

Nevertheless, the milestone of the bond between Biology and Aesthetics can be notified in the 19th century, where the **Art Nouveau** movement was born. The invention of the microscope had an enormous impact on the way artists viewed the world. A whole parallel universe, which has been invisible, could now be observed with the aid of a microscope's lens (Blakenev 2009).

Bachelard (1957, p. 155) states that '*miniature is one of the refuges of greatness*'. Paradoxically, it is the seeds that make the apple, in other words, miniature bears in itself '*a dimension of a whole universe*' (Bachelard 1957, p. 157).





HEN TO PAN

CH.4

all is one, one is all

*'A small individual within the stream. All is One,
One is All.'*

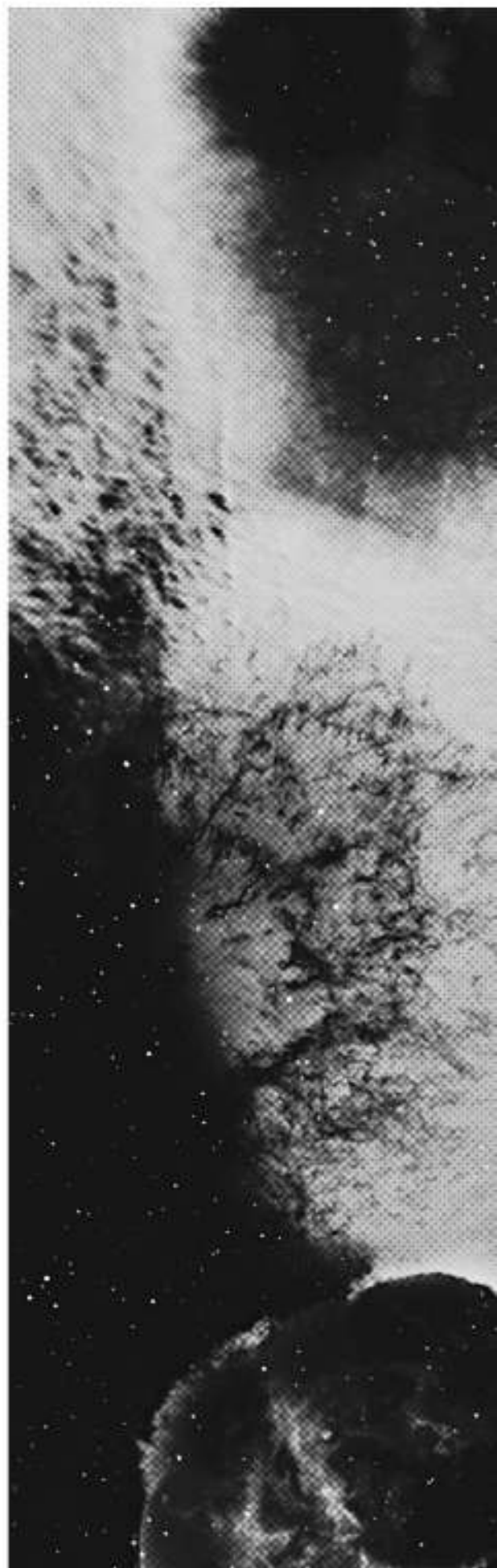
(Fullmetal Alchemist 2009)

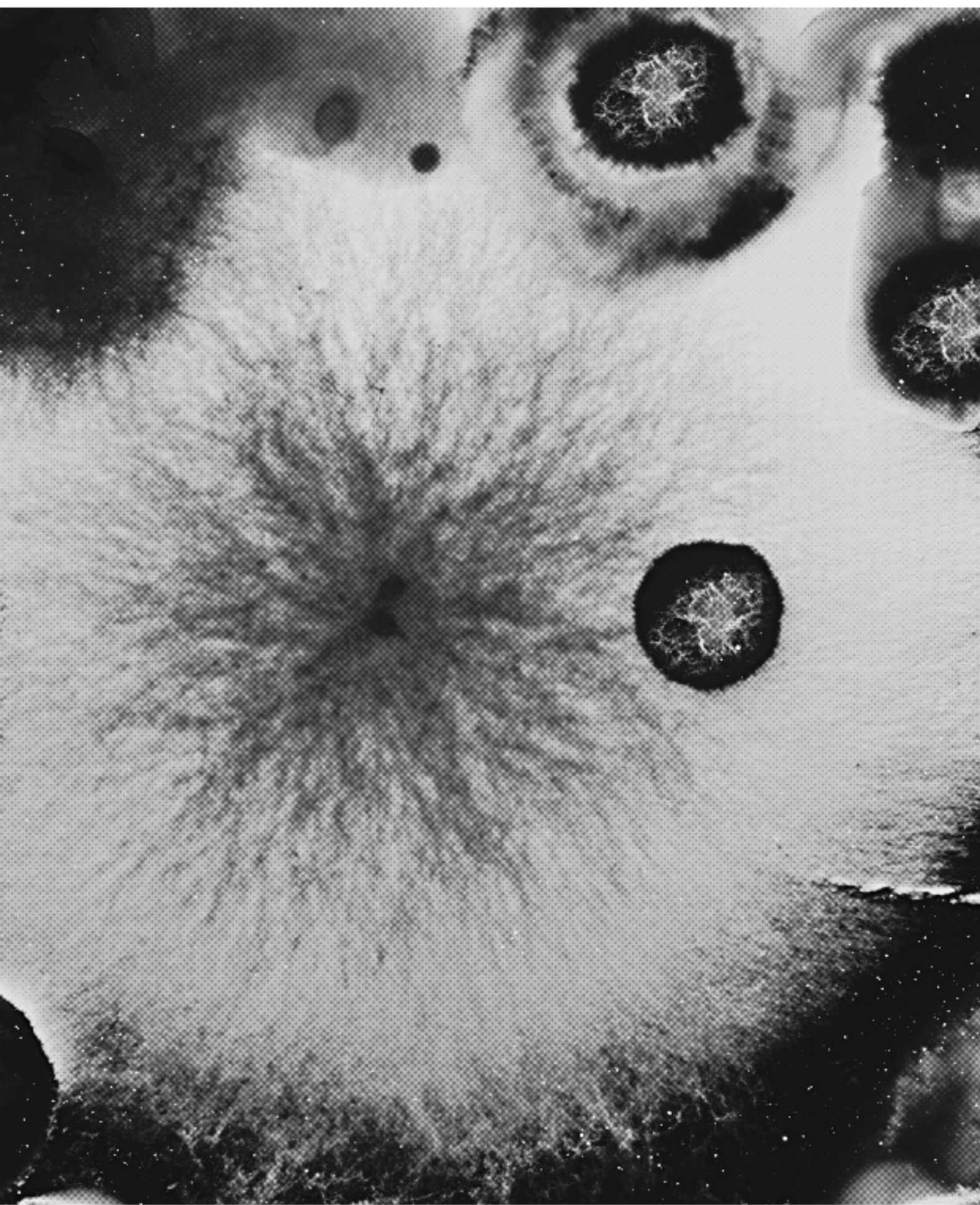
The aforementioned quote has its roots in Cleopatra's Chrysopoleia (χρυσοποιεία - gold making) where: *'One is All, All is nothing and by it is All, and if you have not All, All is nothing'* (Lindsay 1970).

Alchemy has invaginated *'Hen to Pan'* and its strong connection with the cosmic serpent, Ouroboros, as the *prima materia*, symbolising the eternal return. However, this theory can be also found in Anaximander's and Plato's Cosmogony.

As confusing and abstruse as it seems it makes sense. With death comes life, and with life comes death. Consequently, life is perceived as a constant cycle that begins anew as soon as it ends. Simultaneously, Pythagoras asserted that everything is numbers and the numbers are the essence of all things. The monad (Zhmud, 1989) is the origin from which all beings come to life, whilst the monad, as an entity, has no origin and cannot be divided.

On the other hand, for Carl Jung (Zweig 1991, p. 24) the Self archetype is symbolised by a circle with a dot in the center. Within everyone's psyche, can be found a seed-center of the Self, surrounded by a chaotic vortex of issues, fears and passions.





The background is a dark, star-filled space. On the left, a portion of a planet with a dark, cratered surface is visible. On the right, there are several glowing, spherical objects, possibly planets or moons, with bright, hazy atmospheres. A large, diffuse nebula or cloud of gas and dust is visible in the upper right quadrant, glowing with a warm, golden-brown light. The overall scene is a rich, multi-colored cosmic landscape.

CH.5
TELOS
[epilogue]







'To have experienced miniature sincerely detaches me from the surrounding world and helps me to resist dissolution of the surrounding atmosphere.'


(Bachelard 1957, pg. 159)

The part with the greater importance was the artistic application of the idea. Darren Aronofsky's *'the Fountain'* had a great impact on the application of the initial thought: *'One is All, All is One'*. Not only the main theme of the movie which is the rebirth after death, based on Maya's Xibalba, but also the mesmerizing and mind-blowing visual effects. Aronofsky, as a supporter of practical effects depicted universe and the nebula using an edited footage of chemical reactions of fluids in petri dishes

'In space we can observe the same laws of physics that exist in petri dishes. So, the way the motions flow, the way the liquids flow into each other and react to one another, is still part of the same universe.'

(Schrecker 2006)





cultivating seeds

MAKING WORLDS

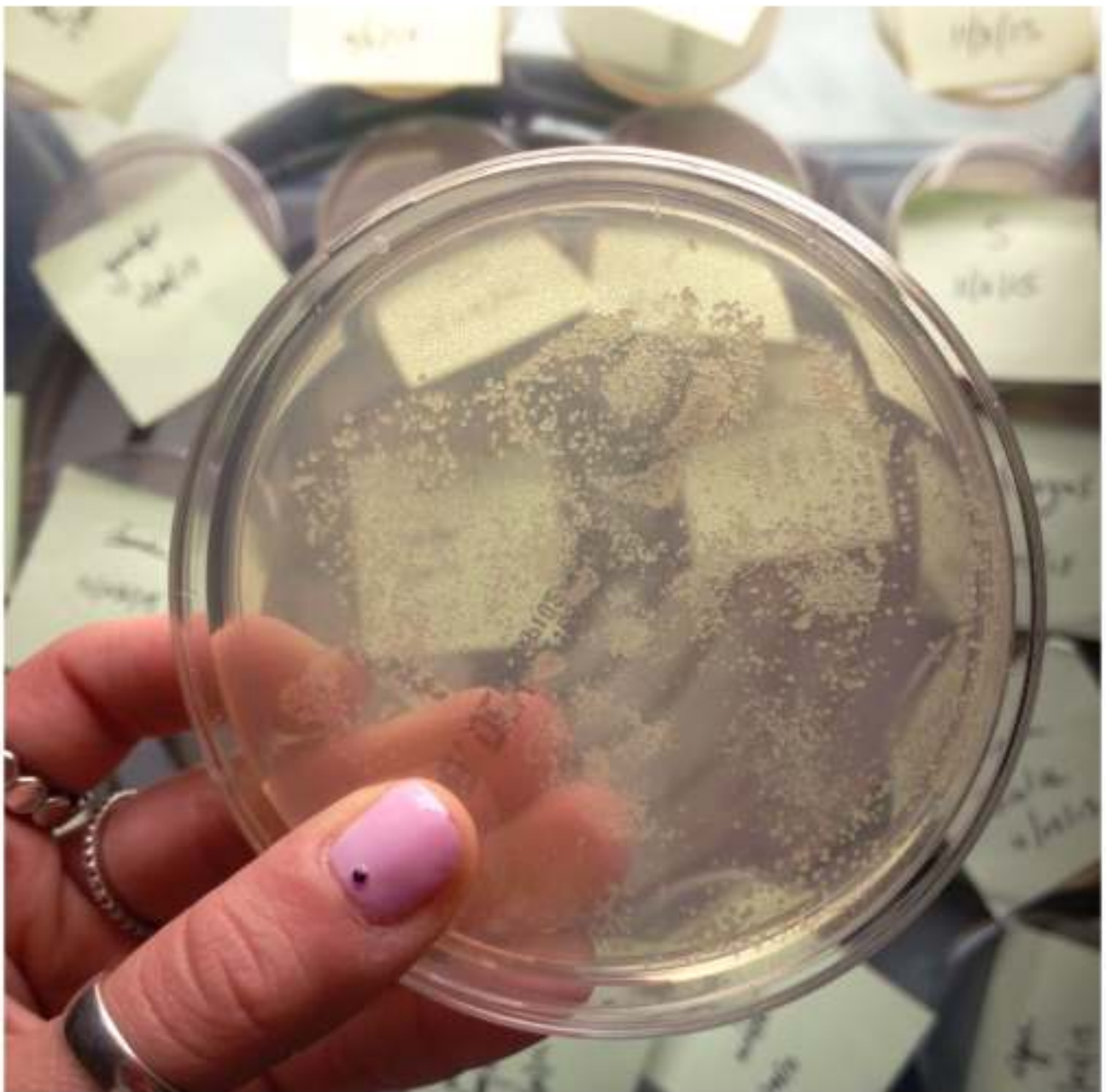
Accordingly, Tolstoy (1995) describes art as an infection, where in order to accept the pleasure it offers, people should consider it as a part of life. **'The stronger the infection the better is the art'** (Tolstoy 1955, p. 140).

It might sound gruesome to parallelize art with infection; however, even bad feelings emitted by any means of art may **'feel good when elicited in the proper context'** (Grinde 1996, pg. 32). Besides, it is not the destination, but the journey as Kavafis quothed in his famous poem Ithaca that perfectly matches Paul Dirac's dicta: **'it is more important that the formulas are beautiful than the experiment fits'** (Heinrich 2012, pg. 743).

MICROBIAL CULTURE

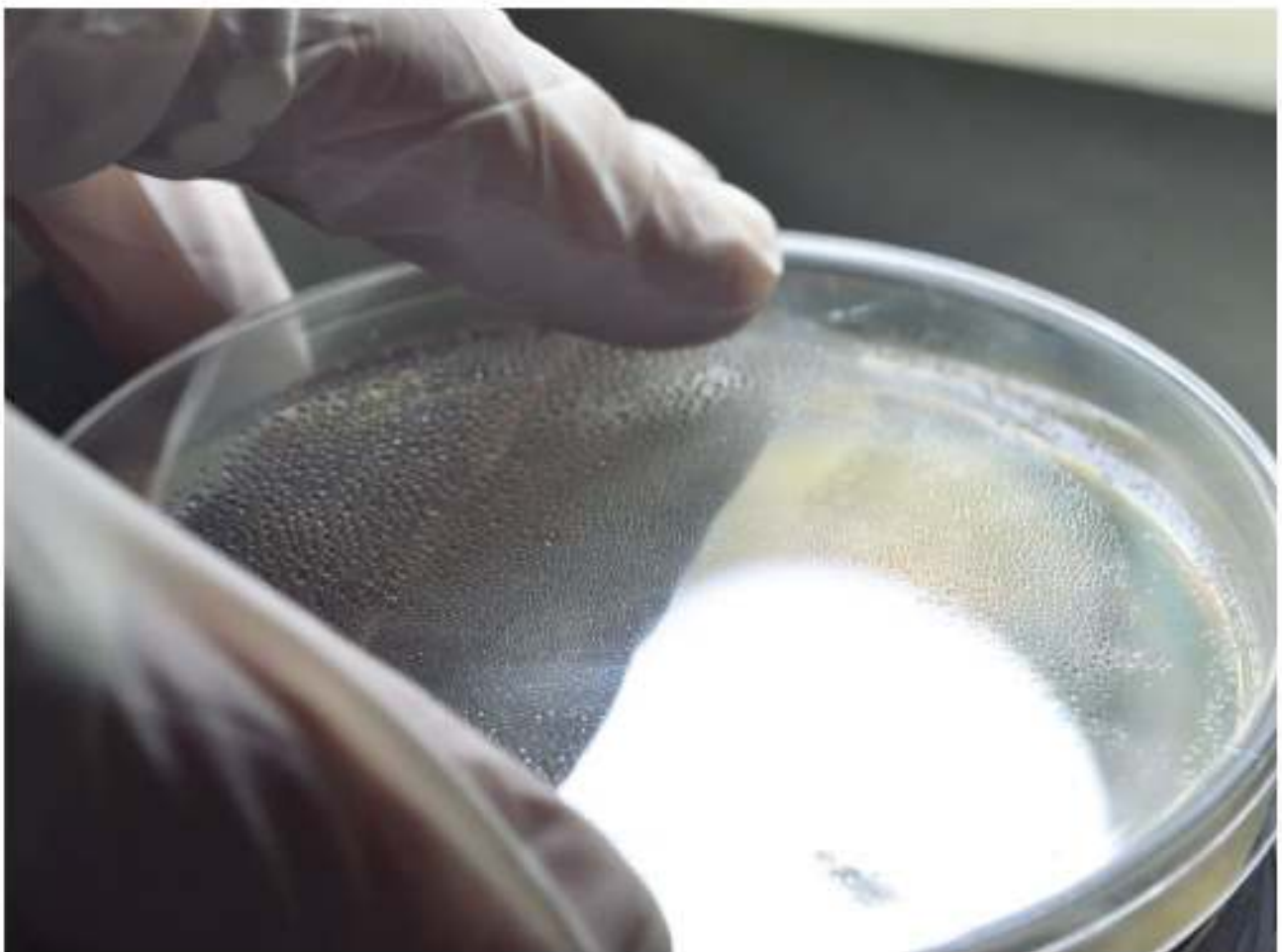
[the procedure]

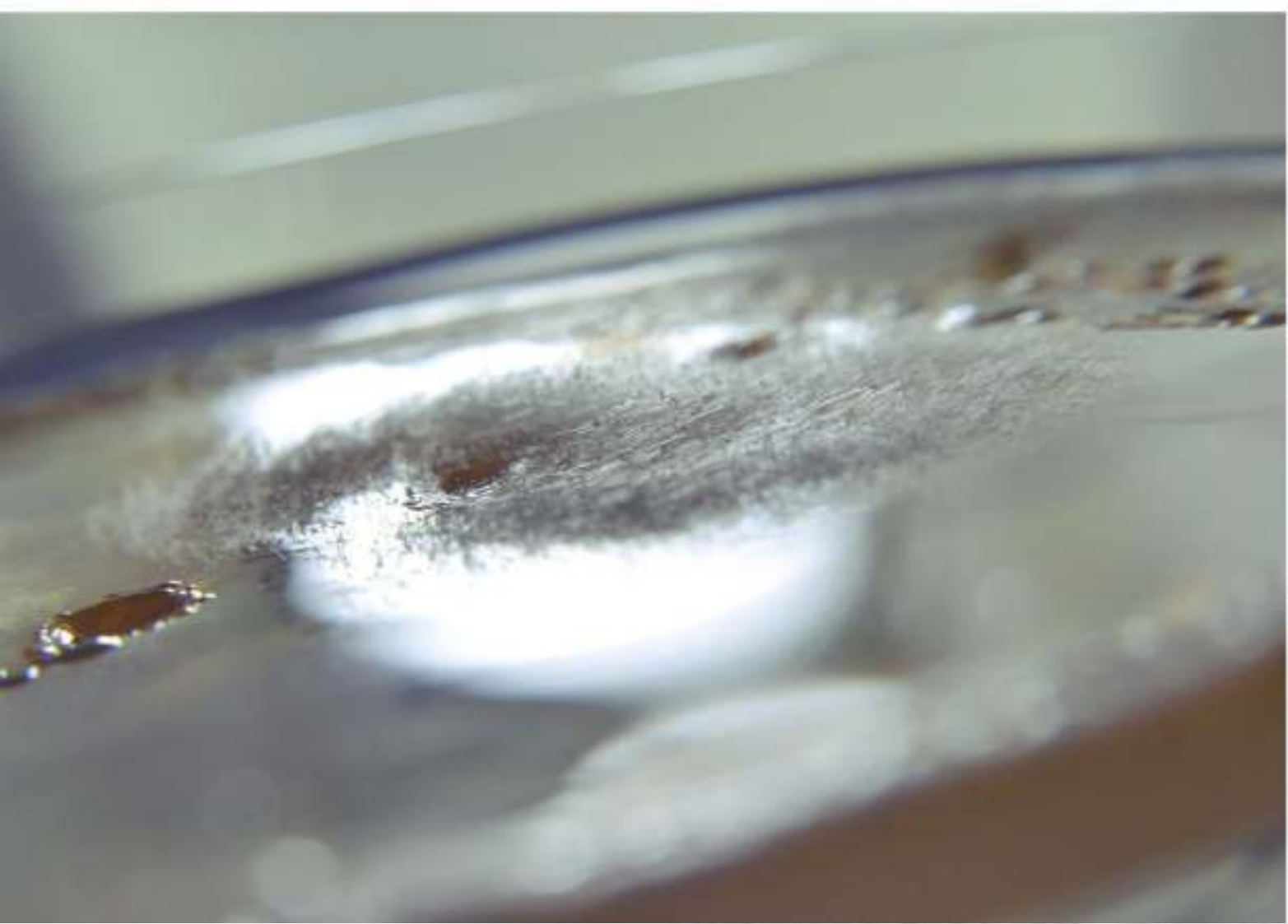
Petri dishes were named after the German bacteriologist Julius Richard Petri. Petri is a shallow cylindrical plate out of glass or plastic that biologists or microbiologists use to culture cell, bacteria and other microorganisms. The modern petri dishes usually feature rings or slot and contain agar, a jelly substance, derived from the polysaccharide agarose. Consequently, agar plates are containing a mix of agar and other nutrients in which microorganisms can cultured and observed under a microscope.



For the present project, 20 petri dishes of 9cm (containing Saboraud Dextrose agar) were used. The samples were taken from family members, ponds, mould infected walls etc. using common ear batonettes and sterilized syringes. The cultivation period lasted almost 2 weeks and the samples were photographed every day in order to observe their progress.

Furthermore, during the cultivation period the lid of the petri dishes was closed for reasons of hygiene since the majority of the cultured microorganisms might be contagious through air. Finally, the last day the lid was removed to meliorate the camera focus as well as taking photos from a close range.









m y f a

UNITIV



m i l l i a r

ERSE



no.1



no.2



no.3





no.4



no.5



no.6

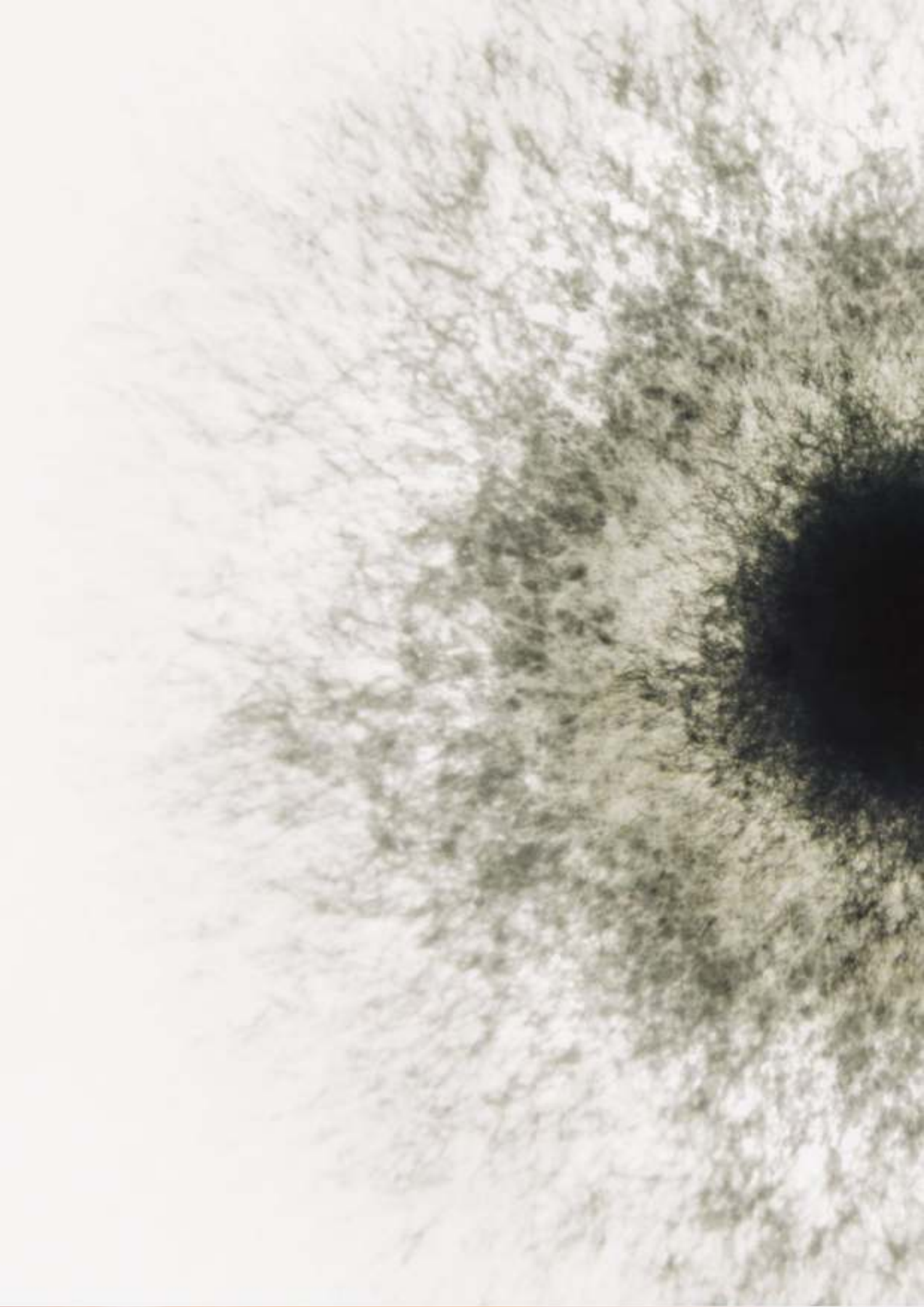


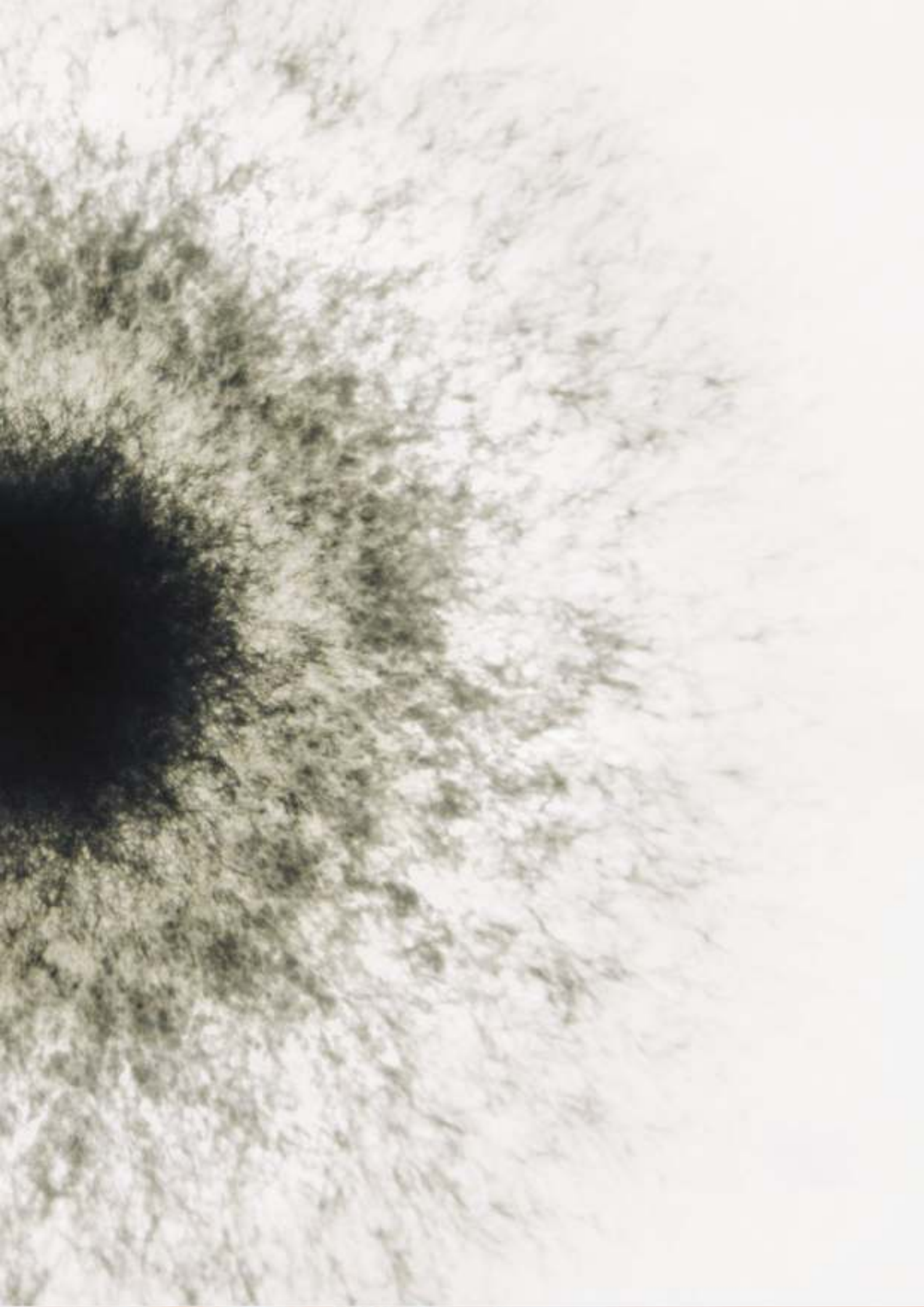






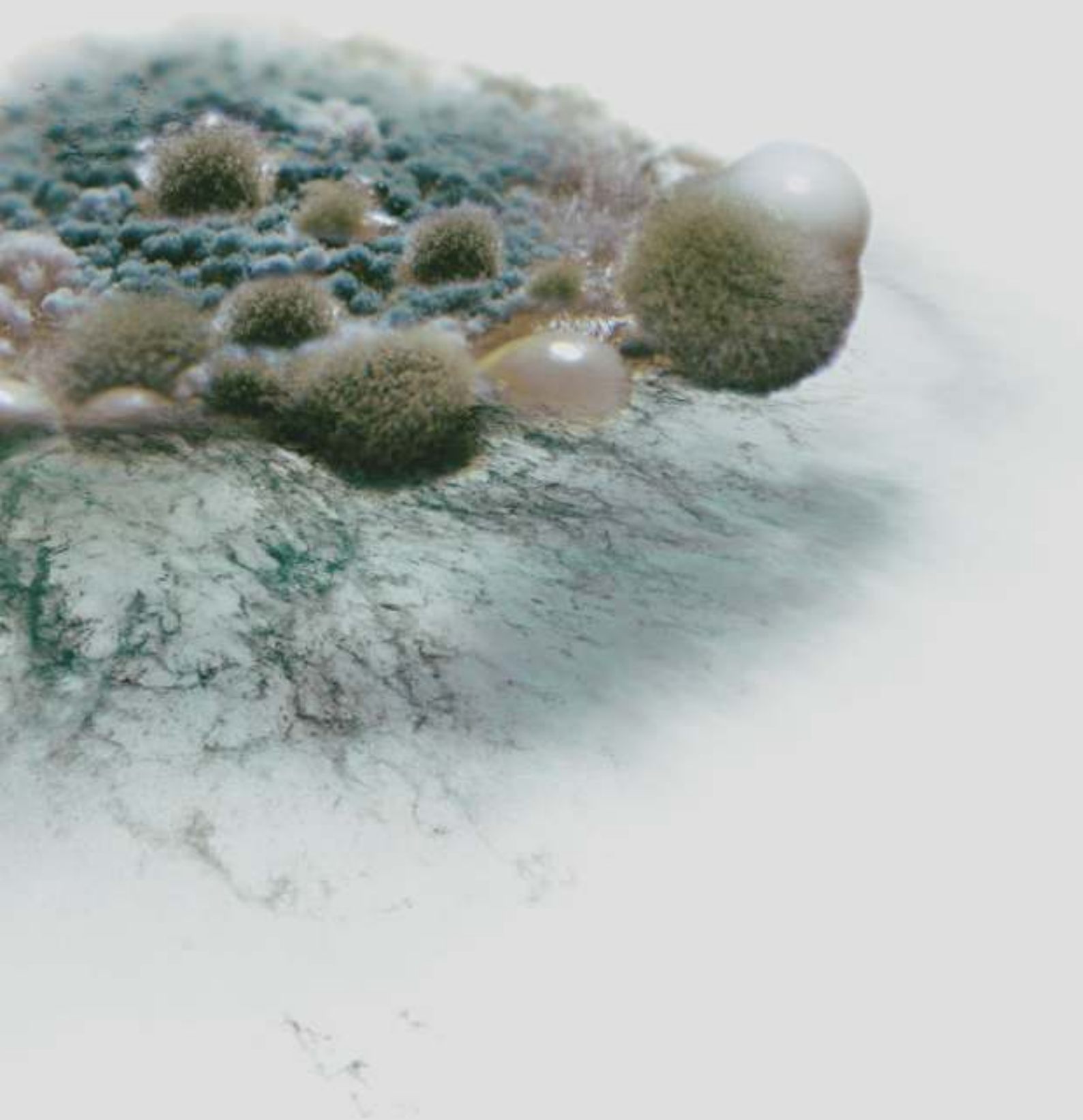




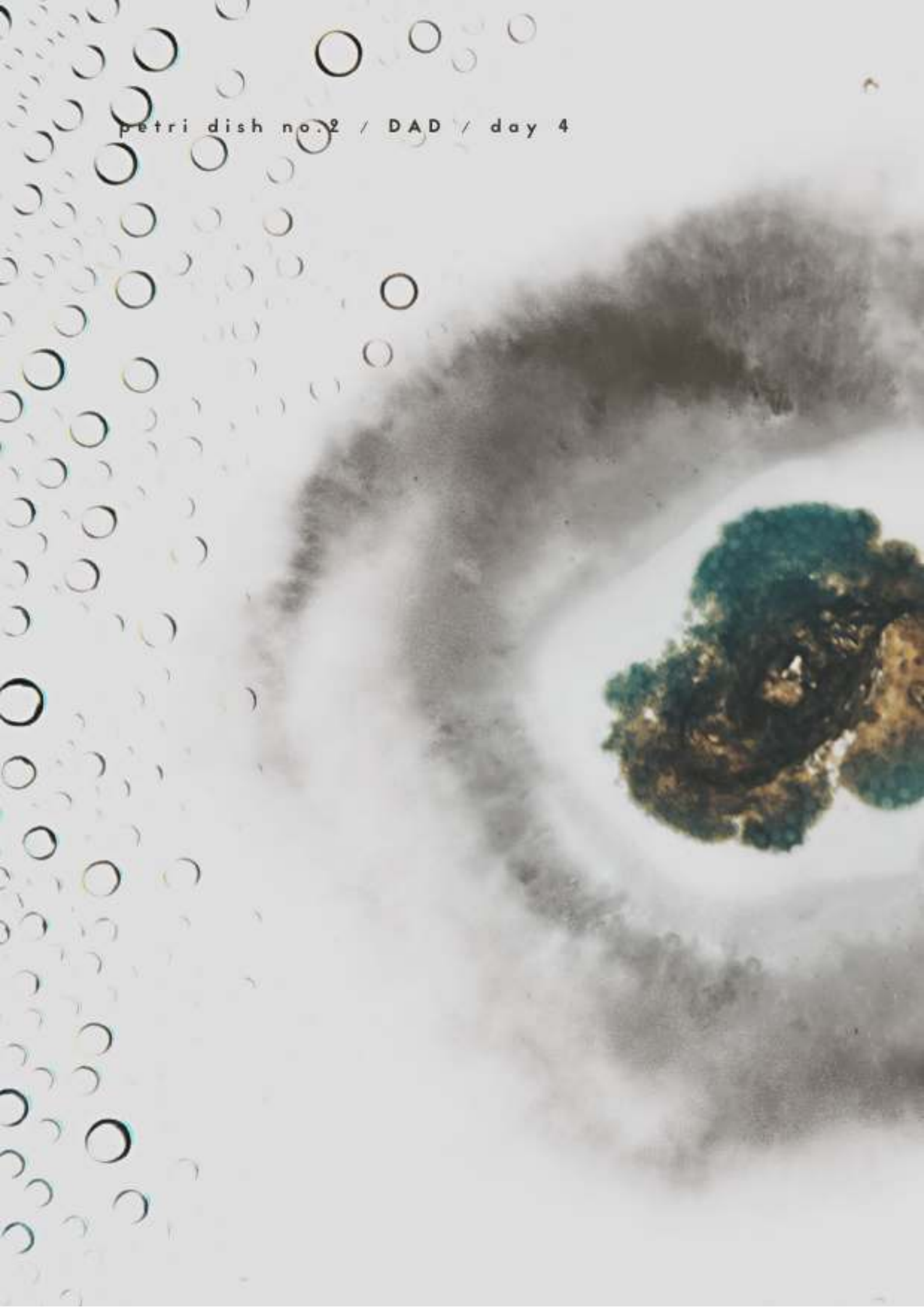


petri dish no.1 / MOM / day 12





petri dish no.2 / DAD / day 4





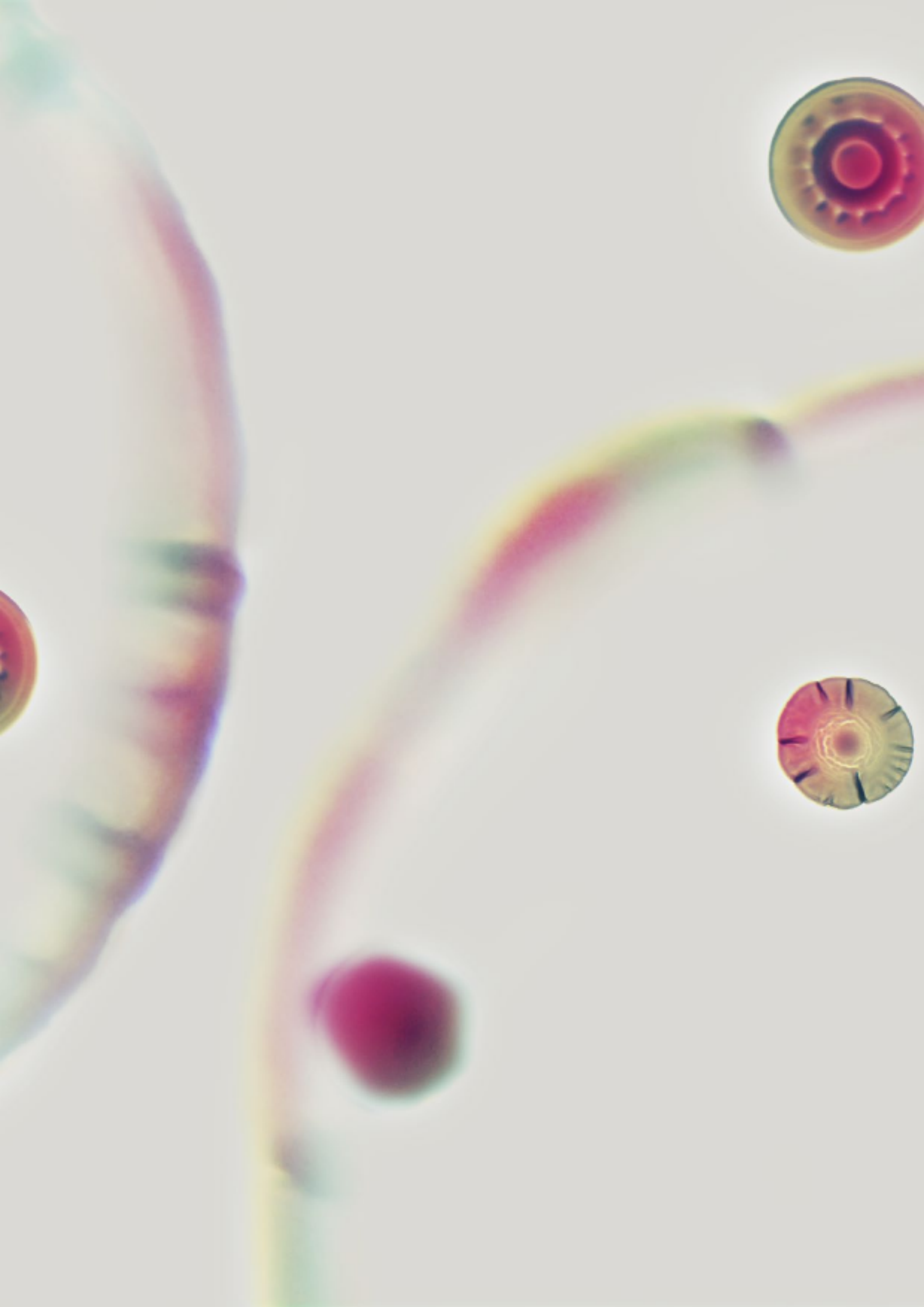
petri dish no.3 / DIMITRA / day 7





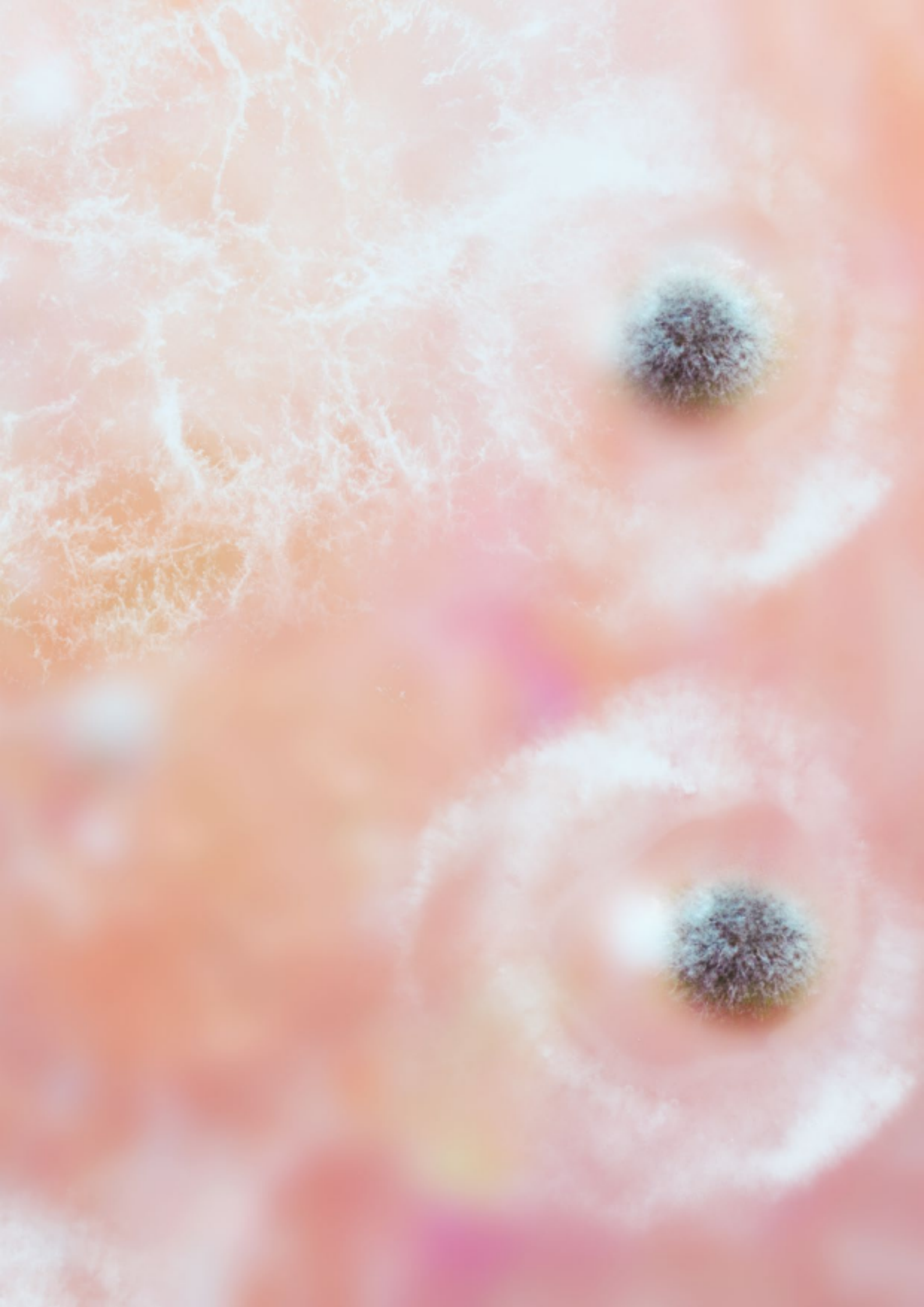
petri dish no.4 / GRANDMA / day 12



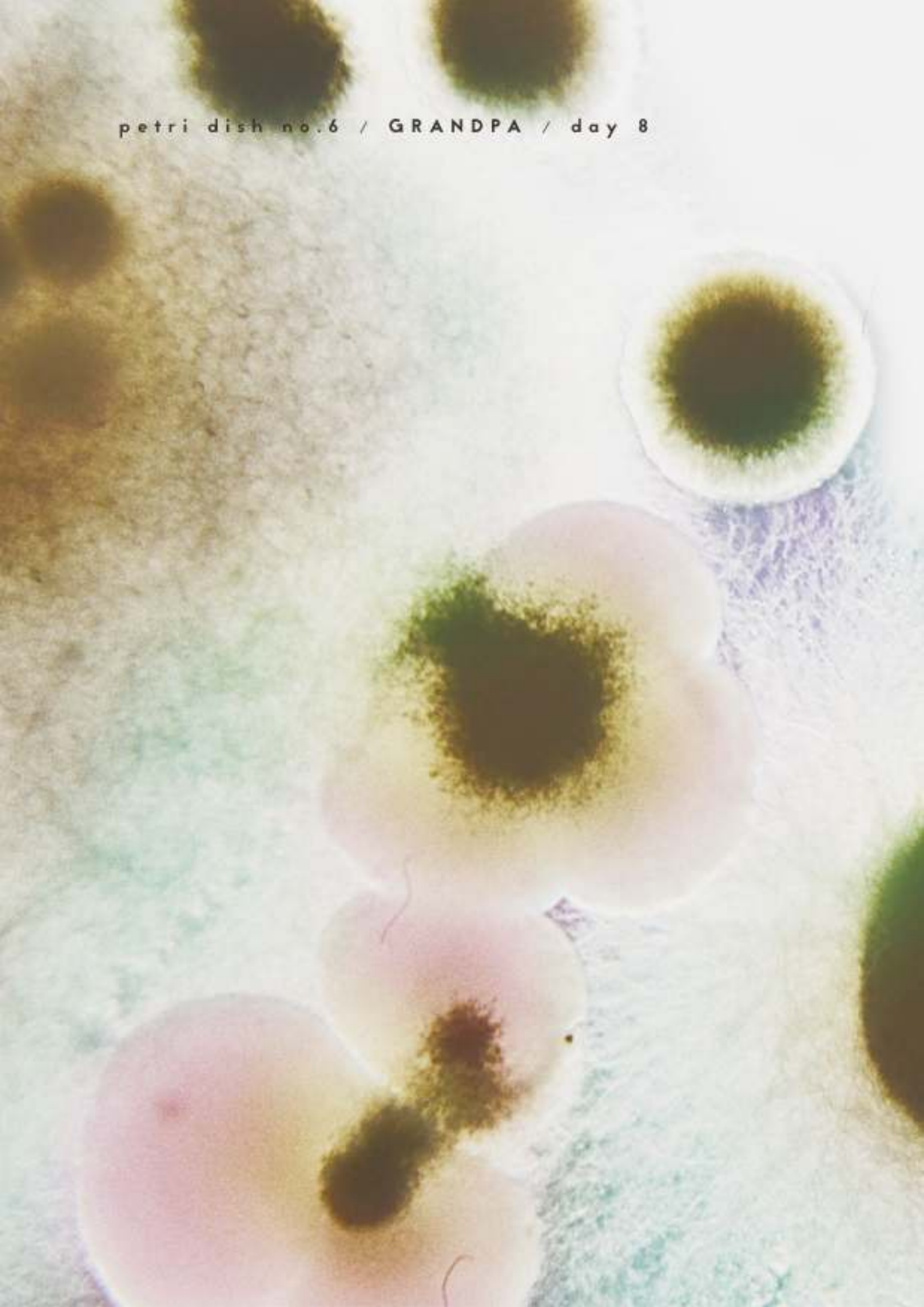


petri dish no.5 / TRAVIS / day 11

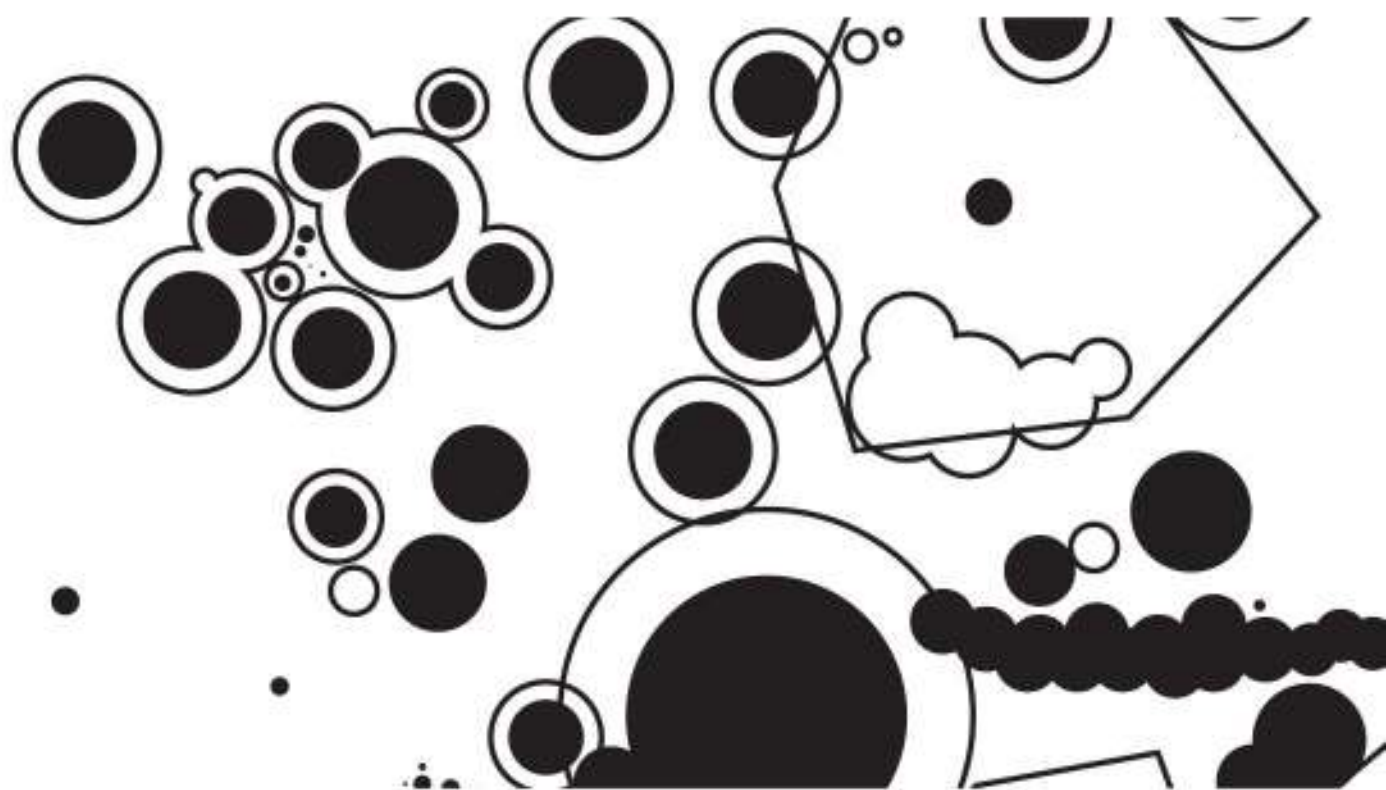


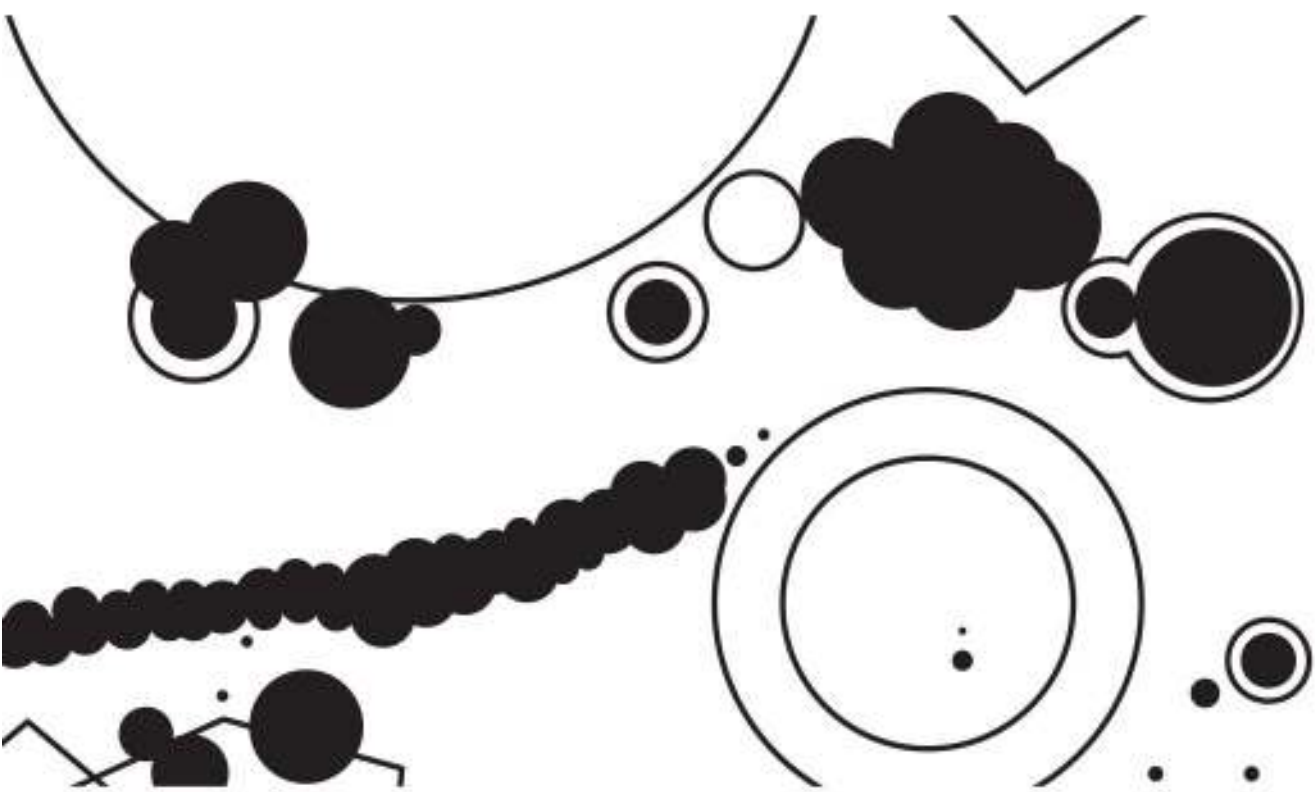


petri dish no.6 / GRANDPA / day 8











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