Irene Kopelman
Workstation Nice.
Marine Models. Drawing Regeneration.

MAMAC—Musée d'Art Moderne et d'Art Contemporain (Nice, France)
June 2021

Two small marine animals,
Botryllus schlosseri *and*
Nematostella vectensis.
Two marine models.
One is colonial, one is solitary.
They are different from each other
in many ways, but they share a capacity.
The capacity of regenerating their full body.
A capacity we don't have.

Workstation Nice was the moment when the outcome of my long-term collaboration with Tiozzo Lab at the Institute de la Mer de Villefranche-sur-Mer, Röttinger Lab at the Institute for Research on Cancer and Aging, and MAMAC—Musée d'Art Moderne et d'Art Contemporain (all in Nice), was shared with the wider public for the first time.

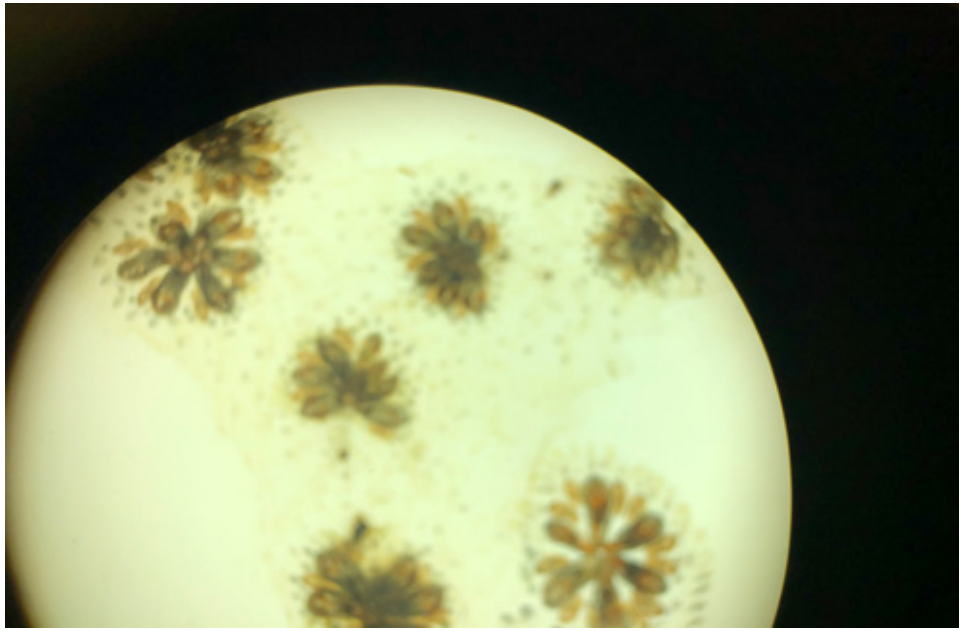
The project began with my residency, supported by the Université Côte d'Azur, at the Tiozzo and the Röttinger Labs 14 months prior to the workshops at the MAMAC, where I presented the development of my research from both Labs. The Workstation was set up as an experimental laboratory, a collectively shaped immersive environment to explore two sea creatures through drawing workshops.

Diverse spatial elements were used to create a setting that would provide best context for such an exploration. A collection of books selected by Martine Fioroni, the librarian at the Marine Institute in Villefranche, which contained historical material on our two sea animals (*Botryllus schlosseri* and *Nematostella vectensis*), as well as other marine organisms from the perspective of regeneration. A series

Tunicates are a large group of ubiquitous marine invertebrates and the closest relative to human that still have the extraordinary ability to regenerate their whole body, not only after severe injuries but also as part of their normal life-cycle as a way to propagate asexually and in order to extend their longevity.

Botryllus schlosseri is a colonial tunicate. Colonies grow on submerged objects, plants, and animals in nearshore saltwater environments.

Botryllus schlosseri are sessile benthic animals that feed by filtering the water. The colony looks like a flower sourrounded by an extra-corporeal vascular system, and each animal like a petal. The colony grows and reproduces asexually by cloning itself (budding), regenerating their entire body in a weekly bases starting from a bud.



of posters that I had been working on since the project started and which illustrated my work process so that it could be shared with my colleagues. A large table with aquariums where the two animals—the models—lived (the aquariums were just standard aquariums but, in this context, they too became an important part of the installation). A microscope connected to a projector so we could see the alive models enlarged—both for objective observation but also for visual stimulation (aesthetic qualities). The sea organisms were minute, therefore having them projected large-scale was essential. They filter-fed and reproduced throughout the two weeks' project. The awareness of that form of life coexisting within the workshops was important for the space we produced.

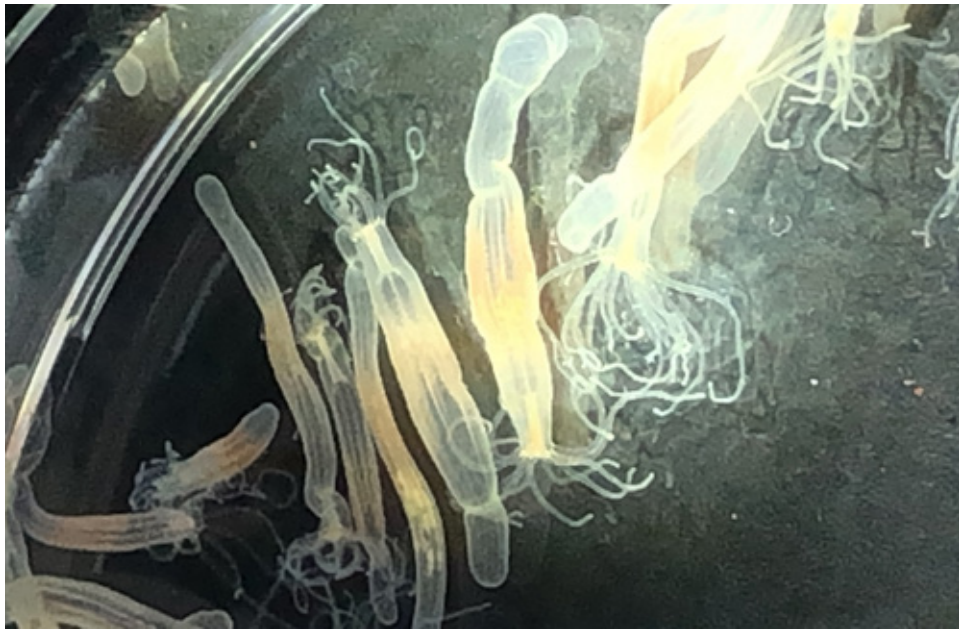
For drawing activities, we used a large lit table which added to the overall atmosphere, providing a bit of light in the otherwise dark space. A video projection on one of the walls featured an earlier footage from the Labs—animated images of the sea animals captured under the microscope—interwoven with my colour drawings of the models. There was also a showcase with samples of my conceptual and preparatory notes and several drawing tests. Last but not least, we had a strip of magnetic paint on one of the walls to which we kept attaching drawings made by the workshop participants.

The ocean is a source of organisms that are used scientifically as model systems to address basic questions of biology. The two Labs examined two different marine invertebrates: Botryllus and Nematostella. In the context

Nematostella vectensis, also known as the "starlet" sea anemone, is an anthozoan cnidarian belonging to the same group of animals as corals. Nematostella lives in brackish waters of estuaries and is native to the east coast of the United States and west of England.

This solitary sea anemone feeds by catching food with its tentacles, it constantly "pulses" via peristaltic movements, contracts upon stimulation and reproduces asexually by separating the aboral part of its body.

This small translucent anemone measures between 1.5 and 4 cm. Among other fascinating biological abilities, it regenerates its entire body from a small fragment in only a few days.



of this project, the word 'model' gained an additional meaning as the two forms of life became also 'life models' for drawing. At the Workstation, we thus observed them from at least two perspectives: as biological models and as a subject for artistic examination. Both aspects were equally important and complementary.

Drawing is a way of thinking and processing of what we see through material and body activity. It is a way of staying on with the subject, exploring it through looking and learning. Forms in nature have a reason to exist and we might be able to understand them better by focusing on, and studying, their properties. In our case, the two little models have an amazing capacity of regenerating their full body structure. It is extraordinary to think how much we could learn from them. Just how and why they do it are core questions for biology. In our project, we tried to tackle these questions too through drawing and imagination.

I consider the Workstation to be a successful undertaking on a few levels, and it could be a blueprint for other interdisciplinary projects. For me, it proved that it takes more than a bunch of people from different disciplines put together in a space for something to become a fruitful collaboration. First and foremost, the Workstation was the result of a long-term engagement with two Labs involved along the way. Then there was a dedicated team at the MAMAC ready to engage with the process, and an artist connecting people and driving the project. All parties were equally involved and shared the willingness to embark on a project whose results were not guaranteed to be successful at the outset. It took time, patience, and mutual trust. But it worked due to the collaborative, accessible and reciprocal way we ran it together.

The Workstation was productive also because of the conditions that were created for me as an artist—allowing the time needed to properly embed myself in the Labs, to understand how they work, to think through my own position within the Museum team, and for that team to accompany me along the way. By the time we planned any drawing activities, I had already undergone a long process of drawing the models myself. As a team, we took our time to build up a community—integrating, absorbing and thinking together.

We created a space which was indeterminate and fluid. Partially a working lab, to some extent an art installation—never one without the other. We hoped to make something which would be somehow undefined, a space that had existed before knowledge took form—a field for, and of, exploration. A relational, emotional, and generous space. We did the physical setup, we planned educational activities, organised all the logistics for animal care and for the participants to visit, and then we opened the doors.

There were two sets of workshops each day, some aimed at primary schools, some for families with children, others for teenagers, adults, and scientists. Number wise, most of the participants were kids from various local schools. We introduced each workshop with a presentation about Botryllus and Nematostella given by one member from each Lab. The presentations content revolved around the biology of the animals (in itself not an easy subject to explain). The purpose of the presentations was twofold: to introduce (explain) complex matter to an unfamiliar audience, and thus to open a perceptual space for the drawing activities to unfold.

After the presentations, we had drawing assignments. Each workshop lasted one and a half hours, which would give the participants time to draw both marine models. These practical exercises were designed to offer a perception of the animal life cycle and the sea creatures' amazing capacity of regenerating. It is a rather complicated biological process and we decided to set the participants a challenge. Children are natural problem solvers, and, in that instance, they could use drawing for the purpose. It was encouraging to watch them trying to grasp the information and transform it onto the surface of paper.

The drawing sessions evolved as the Workstation continued. We first had to see the results of how the kids reacted, to familiarise ourselves with their own ways of grasping and responding to the matter. Some exercises were successful from the beginning and with some we felt they remained on a superficial—that is, formal—level, and as such they required more development. Léah Friedman from the MAMAC's learning department took care of guiding all activities. We devised the exercises together and she became a key person on the project. Not only did she take upon an immense amount of work, but she also entered the process of understanding the biological complexity of the project, my intensions as an

artist, and the challenge of communicating it all with the public. She had no fear of failure whatsoever and offered full flexibility, a leap of faith. And it worked out beautifully.

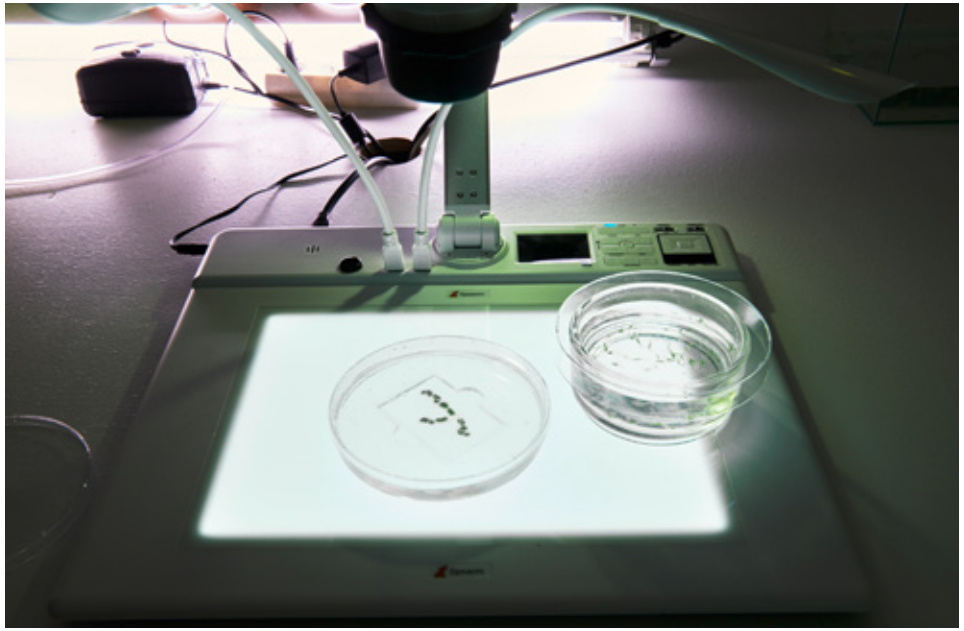
To overcome certain challenges, we often asked for additional help from the members of the labs. Due to the interdisciplinary nature of the project, everything in the space had at least a double meaning. Our two models were very different in terms of biology but also, they differed as drawing subjects. One model was colonial, the other was solitary. That itself posed a challenge for drawing—one model assumed/expanded in spatial patterns, whilst the other was enclosed. Each needed a different approach to line application and to drawing in general. Equally, the colours, the textures, the entire material resolutions varied considerably, as did the creative outcomes deriving from the same model.

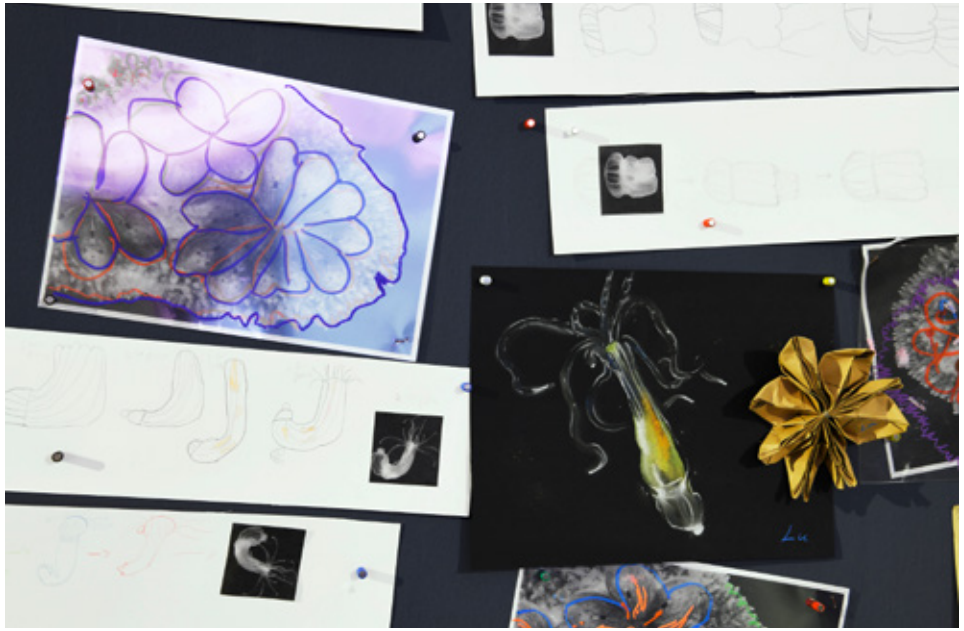
The space was inhabited by children and adults drawing tiny animals from large scale projections. It was such a heartwarming experience to watch their drawings taking over the space. To see our participants experiencing the very (breathing) presence of the animals while working with them, and to see the images of those natural forms multiplying, was fascinating to all of us. Kids would often play with light and shadows, and their silhouettes when absorbed in the act of drawing would merge with the organic shapes as projected onto walls. That proved an enthralling experience both for them, as well as for us as a team.

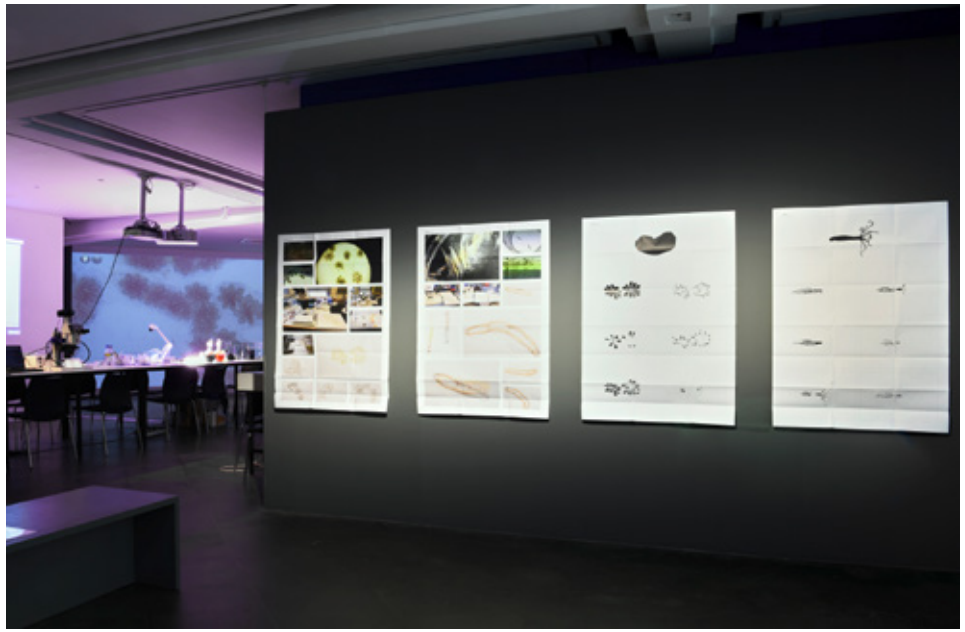
Different publics, various approaches, distinct responses. And us adjusting and reacting to changes. The backstage of the workshops involved quite some action, cleaning and changing the water of the aquariums every second day and feeding the models. Deciding of who would talk and how we might guide some of the drawings also had to be administered. Everything was prearranged in its setup, but we left plenty of space for ourselves to make alterations and improvements along the way, communicating our needs and those of the project.

It would be easy to regard the Workstation as a community outreach project. Whilst naturally there is a desire to reach out to a larger audience and elaborate on perhaps unusual subjects such as the relationship between tiny marine animals and contemporary art, the project's aim went beyond the communication and the educational purposes. For me, it was a way to think through a given topic with others, regardless of their field of expertise or age. It was a shared experience of co-learning—not only for audiences but also for us, creators and organisers.

The results of the workshops far exceeded my expectations, dreams even. I was grateful to all of the participants and the collaborators who inhabited the space in the various roles that they played. What we gained in just two weeks might be difficult to describe but the experience of everyone involved at different levels will live on in the vast number of drawings produced. The animal life cycle captured through the process of us learning how to communicate it, and how to open a space for meaningful interaction and partnership between institutions, knowledges, backgrounds, and ages. The crossovers at the Workstation were not only between art and science, but they also pointed to many other—new—directions. Experiences are difficult to quantify, and the power of art lies in the immeasurable. The Workstation will stay with each of us through our memories, but also through the drawings—the visible traces of our collective experience.







WORKSHOPS

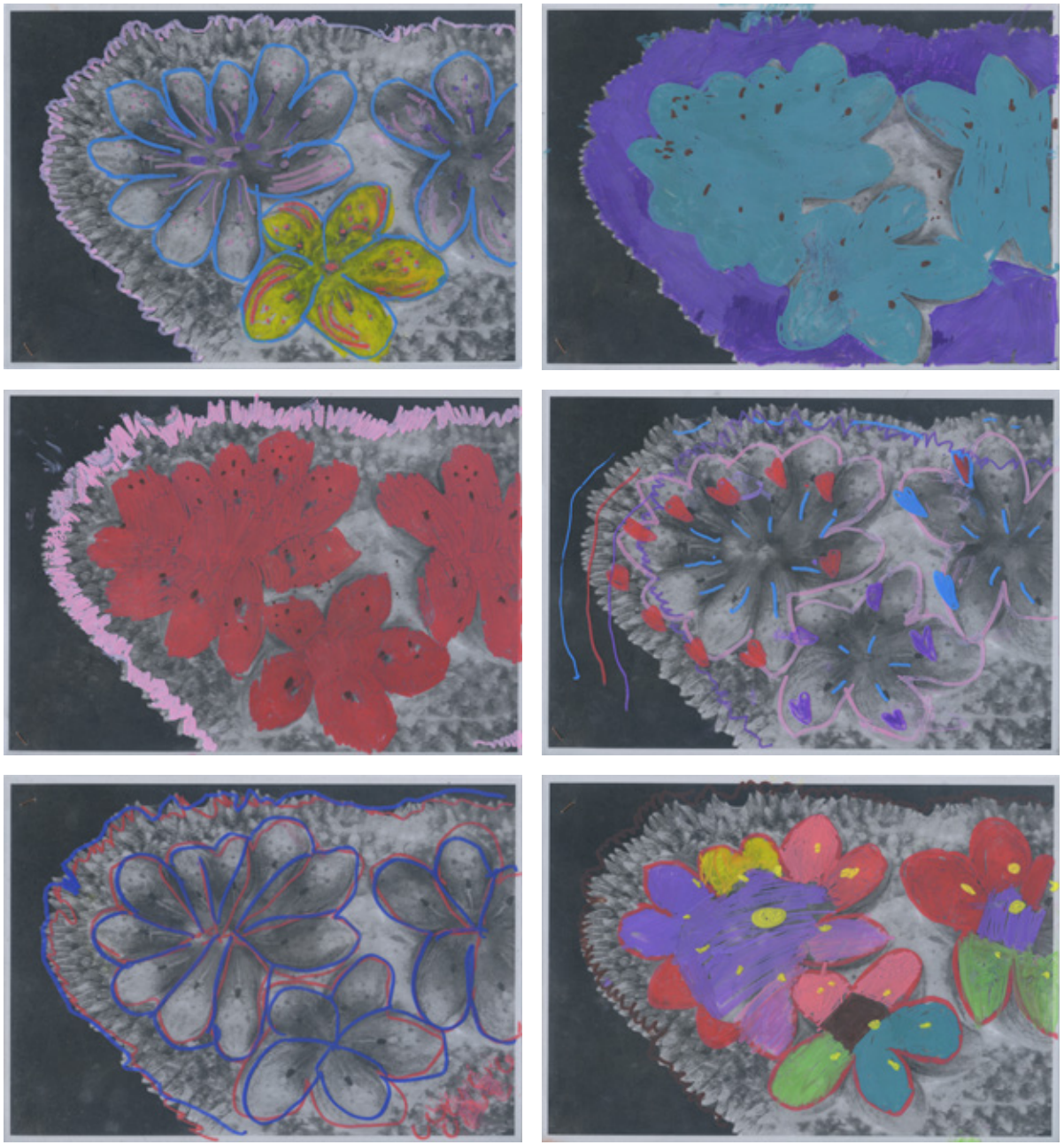
Within two weeks between 8–20 June 2021, we ran a series of 20 drawing workshops for schools and general audience that saw the total of 328 participants engaging in the project. In each workshop, scientists would give an introduction on the biology of the animals, followed by drawing exercises to deepen an understanding of different aspects of the organisms. At the end of each workshop, we displayed the artwork made hanging it on a wall.

Scientists:
Alexandre Alié, Aldine Amiel, Stéphanie Barnay-Verdier, David Broussard, Maxence Burtin, João Carvalho, Megan Clampitt, Pauline Cotinat, Clara Fricano, Paola Furla, Sonia Lotito, Adrien Poquet, Eric Röttinger, Nora Sadoun, Vitoria Tobias Santos, Marta Scelzo, Stefano Tiozzo, Aurore Vullien

Assignment 1
Drawings of Botryllus on acetate paper

Create a 3-dimensional image of Botryllus by superposing acetate paper onto a photograph of the colony. Draw multiple layers of various details of a Botryllus flower system.

We provided an image of Botryllus as a basis—enlarged photo of a colony, plus three sheets of acetate paper. Participants drew different aspects of the organisms on acetate sheets:
1st layer: Contours of the overall shape (tunic)
2nd layer: Animals and internal details
3rd layer: Colour scheme, environment and imagination

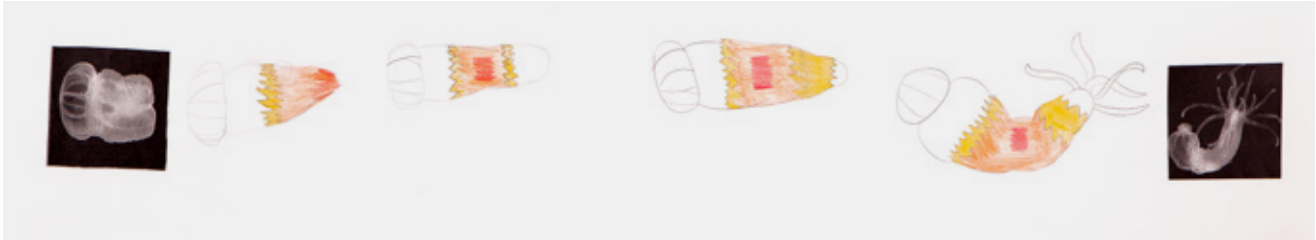


Date: 8, 9, 10, 11 June 2021
Participants: Ecole Auber, École Bischoffsheim, Family workshop, Workshop for teenagers, Ecole Bon Voyage Nice, Ecole du Port, Ecole st Pierre de Féric

Assignment 2
Frameline: Nematostella

The Nematostella has been eaten by a fish or cut in the environment by accident, but a part of it remains. Draw stages of regeneration of Nematostella onto a paper frieze, starting with a remaining fragment and finishing with the reference image of the fully regenerated animal.

We provided one photo of a cut Nematostella, and one image of it when fully recovered after regeneration. We gave participants a long strip of paper and asked them to imagine and draw the process of regeneration. Children were free to use their imagination alongside scientific images as reference.

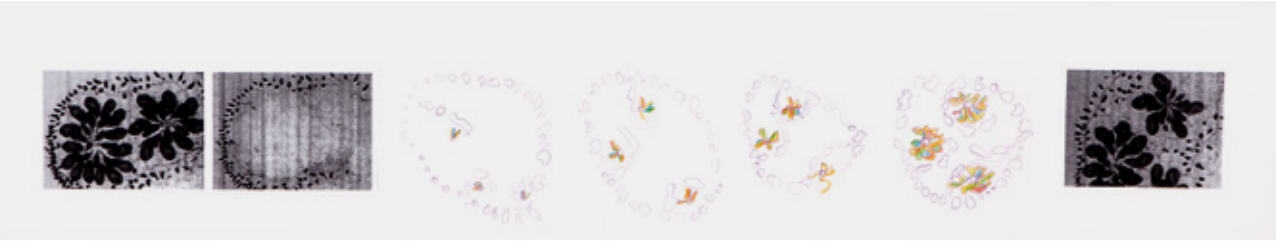


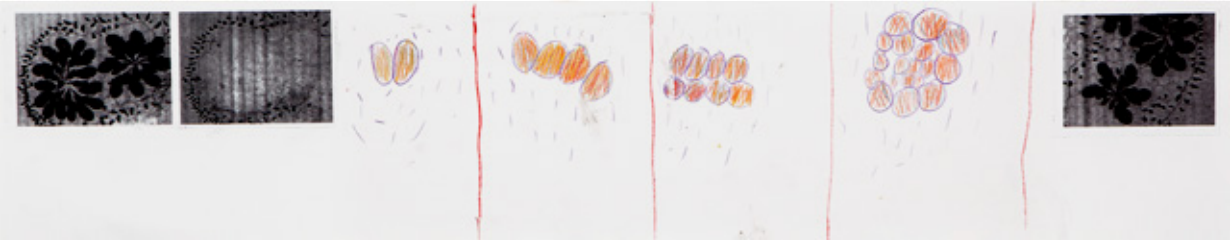
Date: 8, 9, 10, 11 June 2021
Participants: Ecole Auber, École Bischoffsheim, Family workshop, Workshop for teenagers, Ecole Bon Voyage Nice, Ecole du Port, Ecole st Pierre de Féric

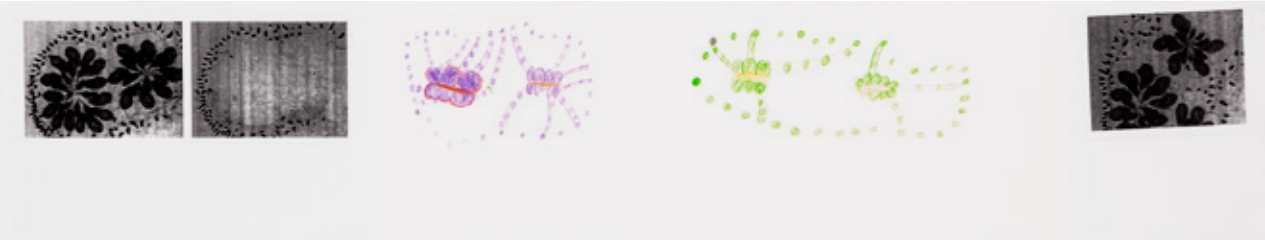
Assignment 3
Frameline: Botryllus

A part of a Botryllus colony has been eaten by a fish. Draw stages of regeneration of Botryllus on a paper frieze, starting and ending with reference images provided.

We offered one image of colony with a missing part, being cut or eaten, and one image of it fully recovered after regeneration, however in a slightly different shape. We gave participants a long strip of paper and asked them to imagine and draw the process of regeneration. Children were free to use their imagination alongside scientific images as reference.







Date: 17 June 2021
Participants: Ecole Risso Nice

Assignment 4
Flipbook of Nematostella

Create a small picture book which, when flipped through quickly and continuously with your thumb, gives the impression of an animated sequence.

The student starts with a reference image of Nematostella being cut and must arrive, drawing by drawing, at the last stage of regeneration (the whole animal). The drawings are assembled in order, with a clip to hold the pages. The participants were given scientific visuals as a support to better understand the regeneration steps of the animal.

Date: 9, 16, 19 June 2021
Participants: Family workshop × 2, Workshop for teenagers and adults

Assignment 5
Flipbook of Botryllus

Create a small picture book which, when flipped through quickly and continuously with your thumb, gives the impression of an animated sequence.

The participants were given scientific visuals as a support to better understand the steps of regeneration and asexual reproduction of the animal. They were asked to create a flipbook drawing on many white sheets on a light table. The drawings were assembled in order, with a clip to hold the pages. Participants worked on different aspects of regeneration and asexual reproduction in Botryllus:

- The asexual reproduction of Botryllus: the colony grows and reproduces by cloning itself (budding). The colony looks like a flower and each animal like a petal. The association helps to understand the organisms. The participants started with the observation of a video reference of the asexual reproduction of a Botryllus. Then, the participants had to arrive, drawing by drawing, at the complete cycle of asexual reproduction.
- The regeneration of a whole colony: all the animals from a Botryllus colony has been eaten by a fish but grows back in a slightly different shape and spreads more and more. The participants represented, drawing by drawing, the regeneration of the colony.

Date: 16, 19 June 2021
Participants: Family workshop, Workshop for teenagers and adults

Assignment 6
Clay sculptures of Nematostella

Create a sculpture of Nematostella and experiment with the animal's regeneration process.

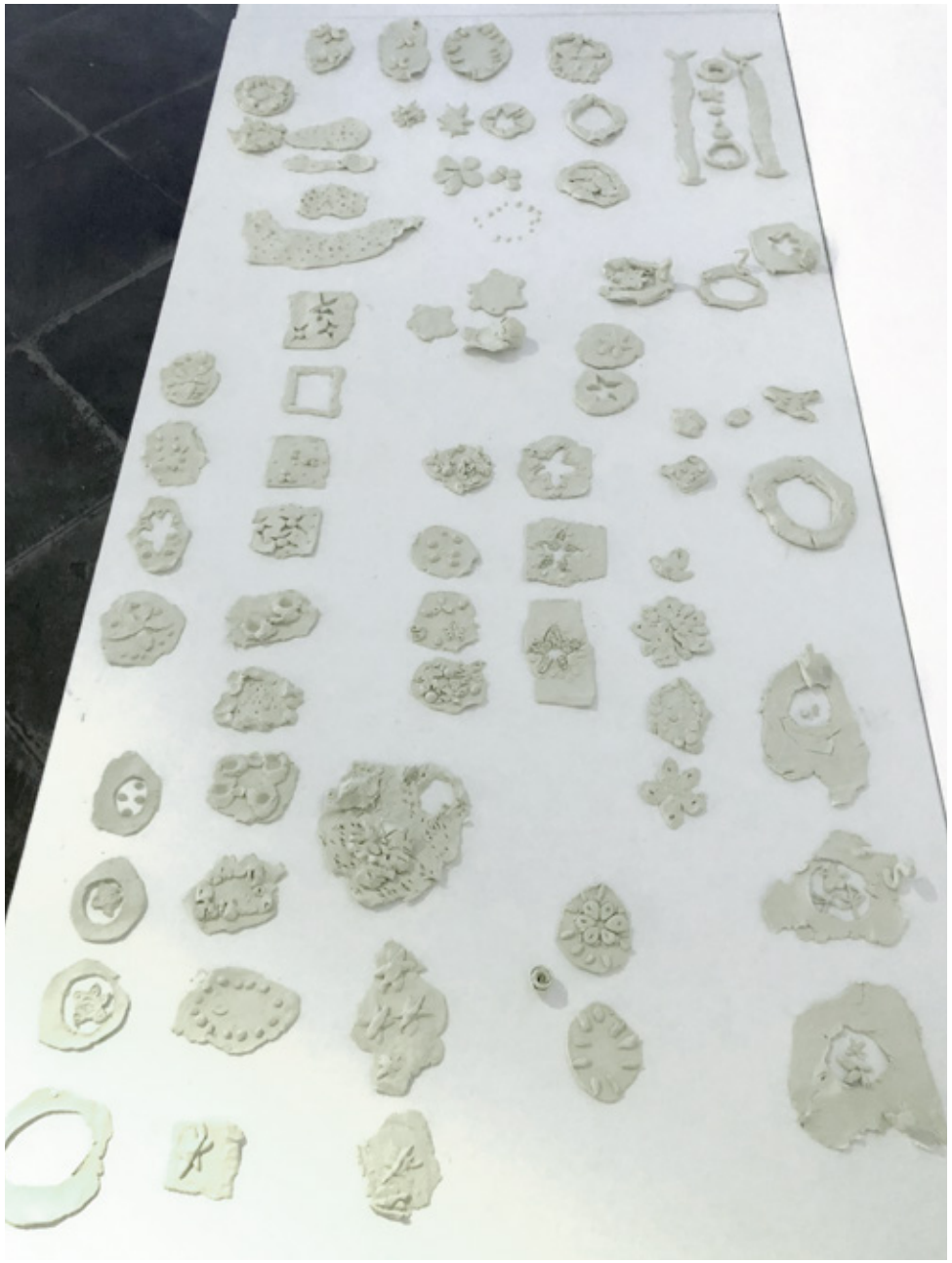
First, participants were asked to make their own animals with white clay. When done, they had to cut them in half. With the two parts, they had to re-grow the animals using more clay. Participants finished with two sculptures of Nematostella.

Date: 15, 16, 18 June 2021
Participants: Ecole du Port, Family workshop, Ecole Rothschild

Assignment 7
Clay sculptures of Botryllus

All the animals from a Botryllus colony has been cut. But the colony grows back in a slightly different shape and spreads more and more... Create a sculpture of Botryllus and experiment with the animal's regeneration process.

We gave three scientific visuals representing regeneration steps of Botryllus to the participants. The first image was a colony. The second image showed a gap, just a trace of where the colony was (the tunic) the colony had been cut or eaten. The third image showed the colony that fully regenerated itself but in a slightly different shape. The participants were asked to represent the in-between stages of regeneration in clay using their imagination, and with the challenge of adding a fourth sculpture. The fourth sculpture would represent the link between the second and the third image.

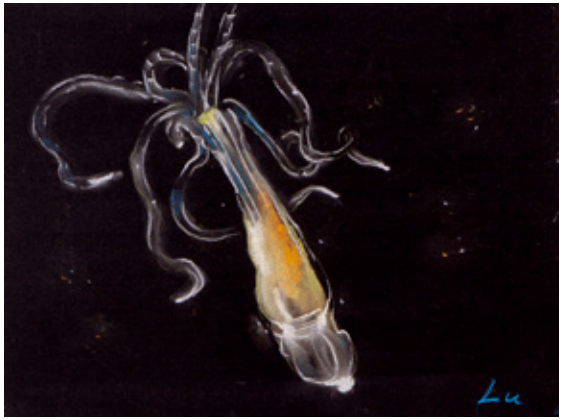


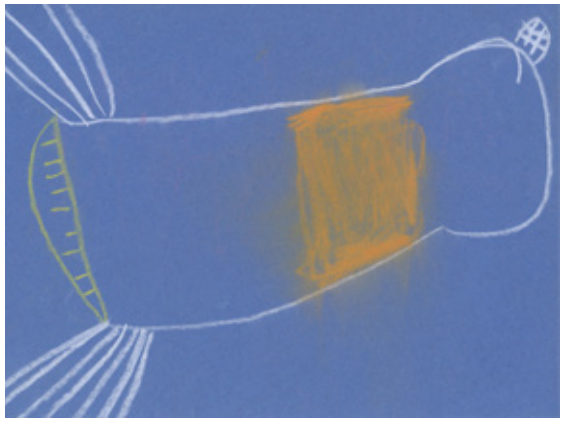
Date: 15, 18 June 2021
Participants: Ecole du Port, Ecole Rothschild

Assignment 8A
Live Observation of Nematostella

Participants were asked to observe an enlarged image of the animal projected live onto a wall via the microscope.

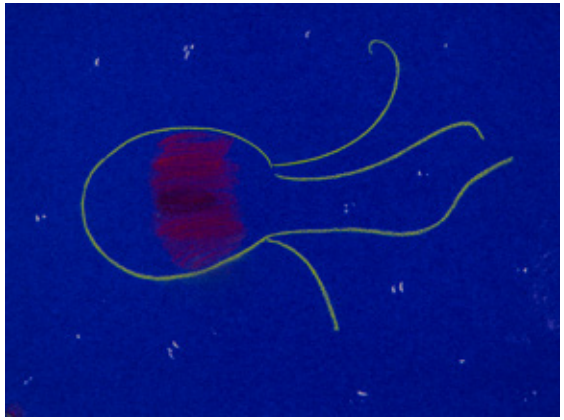
A:
We gave them multiple choices of coloured paper and oil and dry wax crayons, and they could realise an unlimited number of drawings. The colours of the paper were dark brown, black or blue, so the participants worked with contrast and light (chiaroscuro).

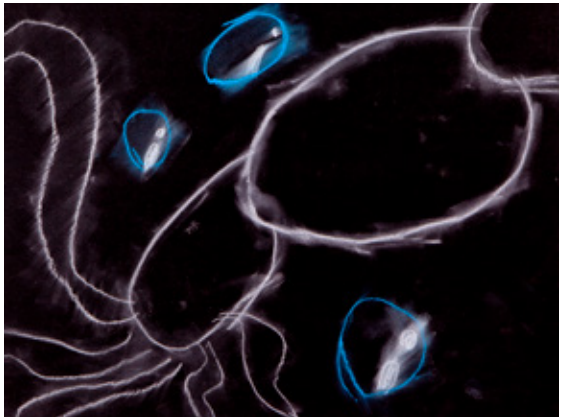




Date: 17, 18 June 2021
Participants: Ecole Risso Nice, École Supérieure d'Arts Plastiques de la Ville de Monaco, École nationale supérieure d'art Villa Arson

Assignment 8A
Live Observation of Nematostella



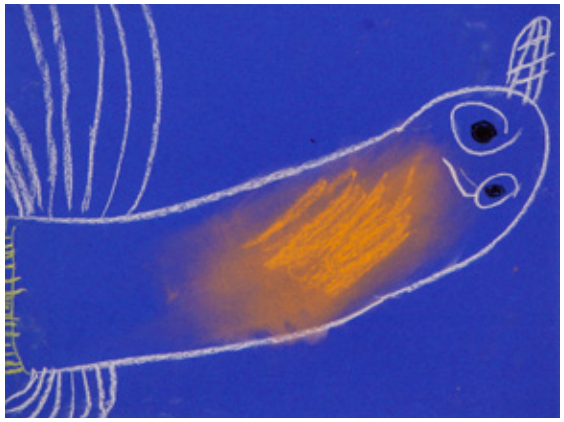


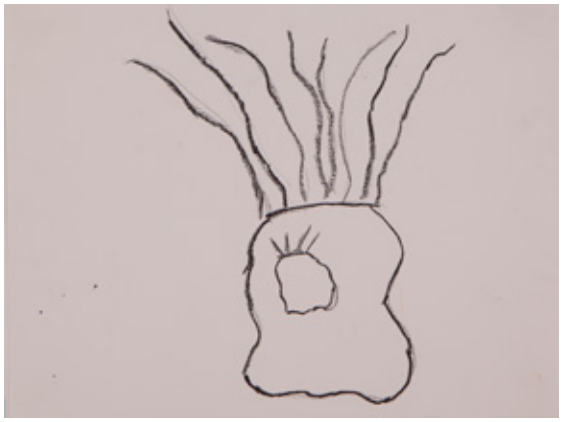
Date: 13, 20 June 2021
Participants: Workshop for IMEV, Workshop for IRCAN
(Scientists and their families)

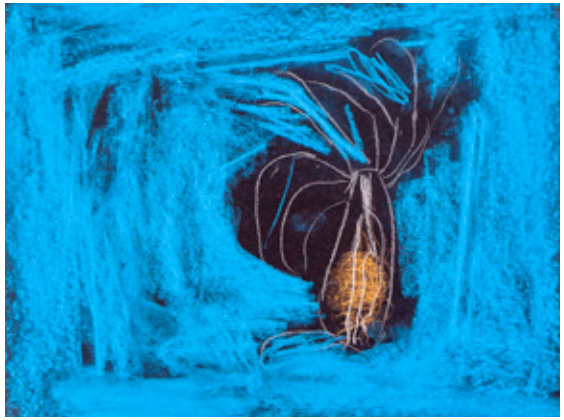
Assignment 8B
Live Observation of Nematostella

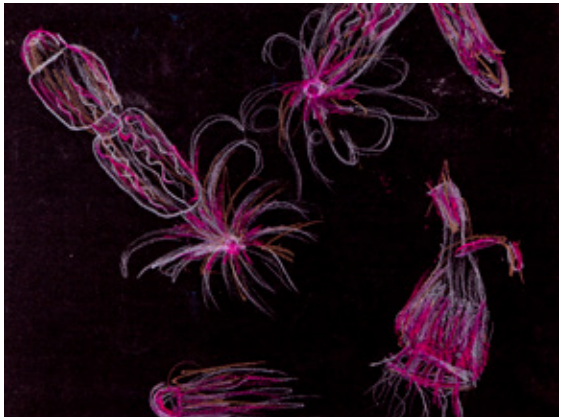
Participants were asked to observe an enlarged image of the animal projected live onto a wall via the microscope.

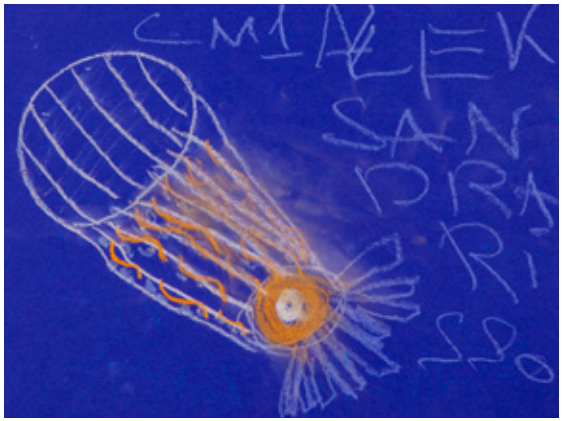
B:
We gave them an extra indication to look at the mesentery (digestive an reproductive organ) of Nematostella as it is the part that must be included in the cutting for the animal to regenerate.









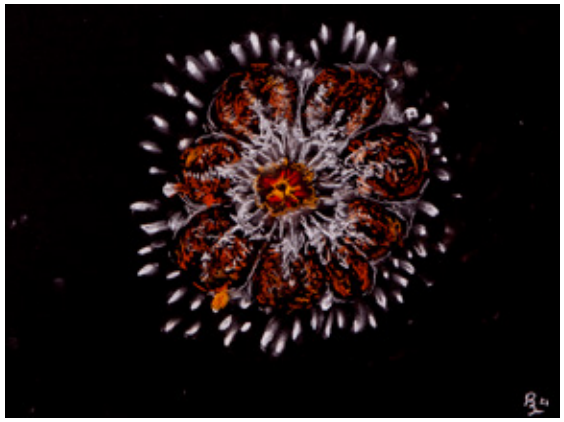


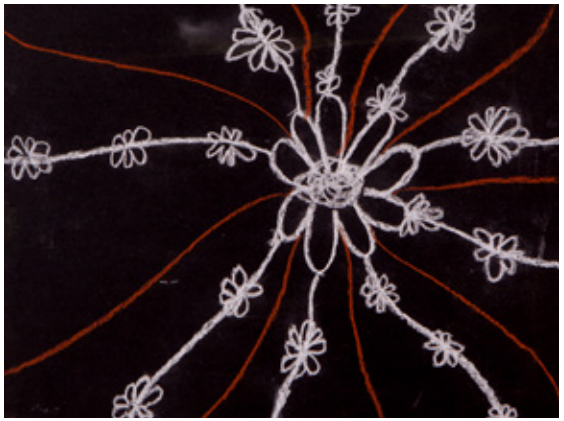
Date: 17 June 2021
Participants: Ecole Risso Nice

Assignment 9
Live Observation of Botryllus

Participants were asked to observe an enlarged image of the colony projected live onto a wall via the microscope.

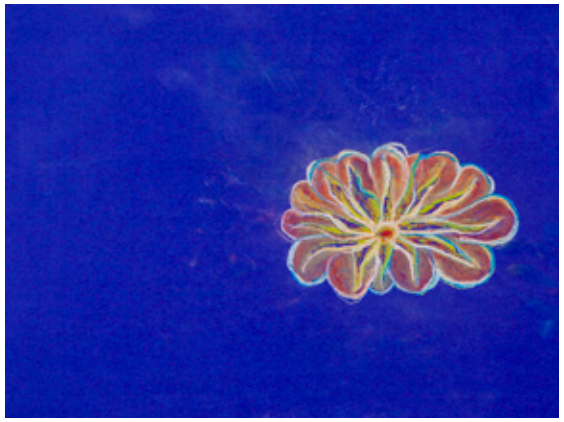
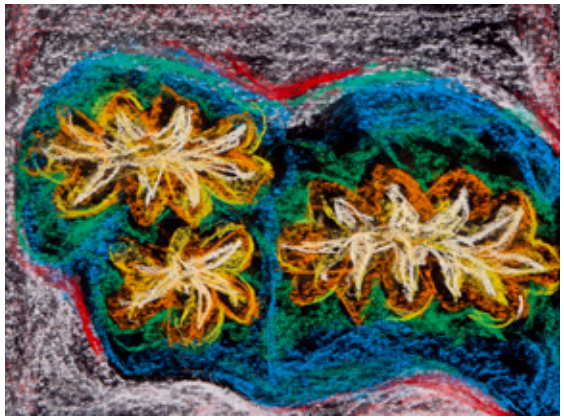
We gave them multiple choices of coloured paper and oil and dry wax crayons, and they could realise an unlimited number of drawings. The colours of the paper were dark brown, black or blue, so the participants worked with contrast and light (chiaroscuro).





Date: 13, 20 June 2021
Participants: Workshop for IMEV, Workshop for IRCAN
(Scientists and their families)

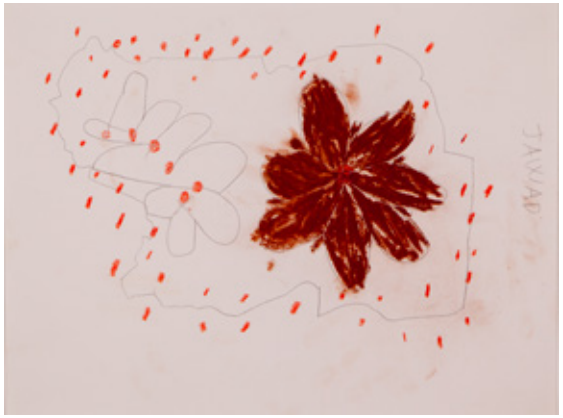
Assignment 9
Live Observation of Botryllus

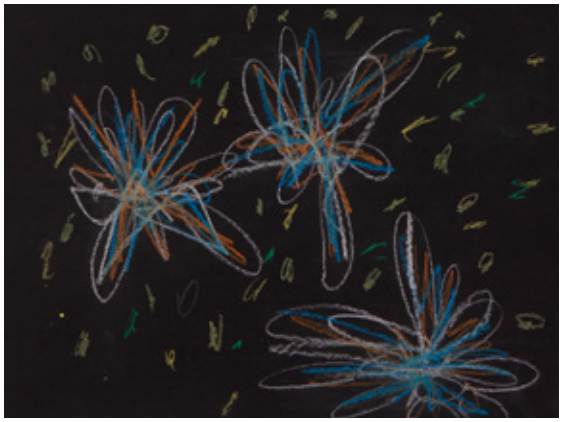



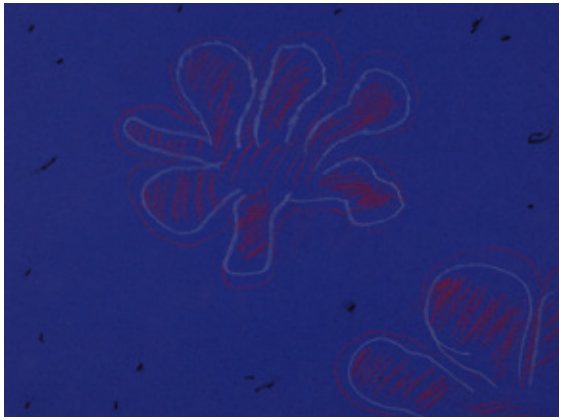
Date: 18 June 2021
Participants: École Supérieure d'Arts Plastiques de la Ville de Monaco, École nationale supérieure d'art Villa Arson

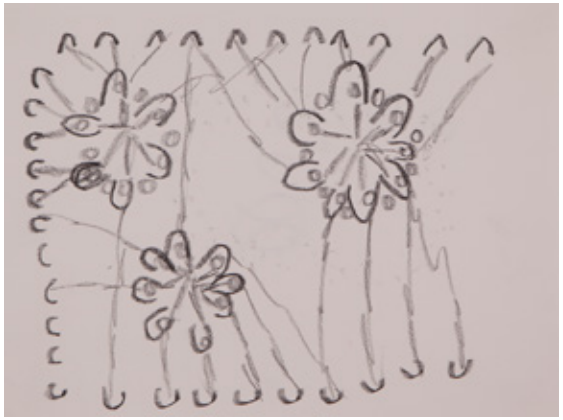
Assignment 10
Drawings the steps of the regeneration of the Botryllus

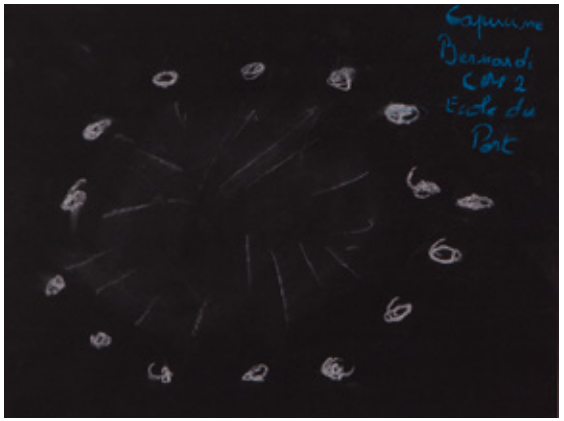
All animals of a Botryllus colony has been eaten by a fish. But the colony grows back in a slightly different shape. We gave three scientific visuals to the participants, representing the regeneration stages of Botryllus. The first image was a colony. The second image showed the same basic form but with a gap, an animal had been cut. The third image showed the colony that fully regenerated itself in a slightly different shape. The participants were asked to draw these three stages of regeneration, with the challenge of adding a fourth drawing. The fourth drawing would represent the link between the second and the third image.











Date: 15 June 2021
Participants: Ecole du Port

INSTRUCTION MANUALS

Prior to the workstation activities, instruction manuals designed by the artist were sent to local schools. The manuals' main purpose was to introduce the kids to the marine organisms and to the dynamic of learning by drawing. Some teachers ran the activities with children in advance and brought the drawings to the workstation.

If we look at them, we see a pattern. Is this interesting to draw?

You can draw them in any material and at any size you like!

If you start looking carefully and you zoom into the image, you will start noticing other things that are also nice to draw. How about those little dots in between?

Can you see them?

Sometimes it is also interesting to look at the details that are less obvious. One example would be the spaces in between the organisms. Once you start to concentrate on these spaces, you will realize that they are not empty and in fact make their own shapes.

3/9

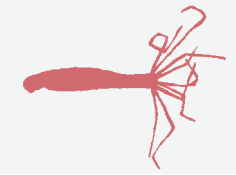
Here, we will concentrate on looking at them as a source of inspiration for making art. They are very beautiful and there are many ways we can look at them.

As an artist it is important to decide what materials you want to work with. Drawings of the same thing will look completely different depending on the materials you choose.

We can decide to work with watercolours:

With lines:

Or with the flat color:



How would you like to draw Nematostella? There are lots of other options too! Think about what you like best and try it out.

It's interesting to know that Nematostella change in colour, depending on what they eat. You might choose to draw it in some of these different colours.

Can you imagine what they could have eaten to change colour? Draw it too!

3/7

Another very interesting thing about Nematostella is that it changes a lot from when it's a fertilised egg and becomes a young creature called a juvenile, and then an adult.

This is a drawing of a fertilised egg:

This is a drawing of a Juvenile:

And this of an adult:

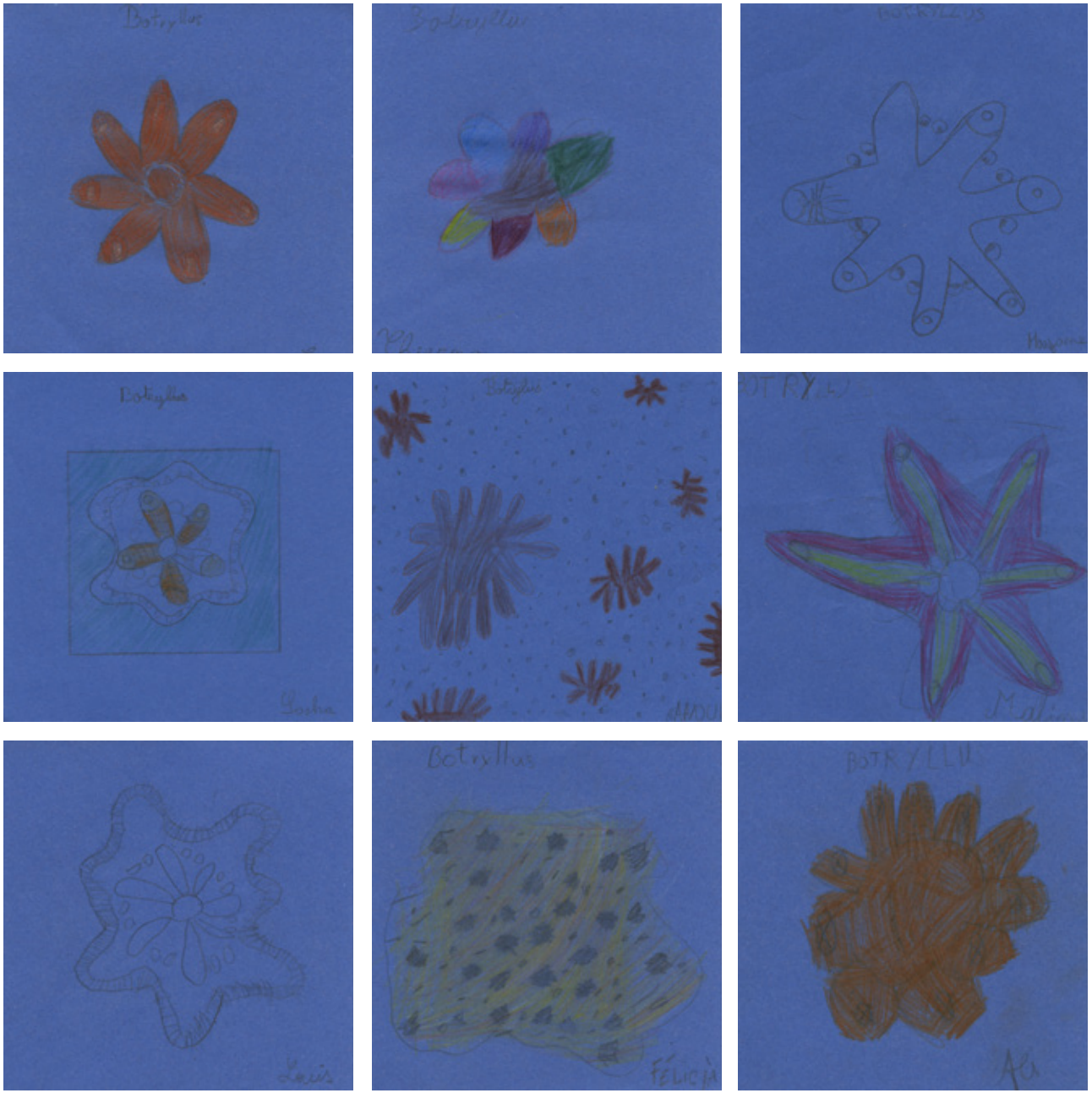
Can you imagine what happened to the creature to grow from one stage to the next? Make some drawings that show these changes.

As artists, we have a lot of freedom to decide how to draw and what to draw. We can play with colour, size, texture and materials.

If you have more ideas than the ones suggested here, go for it!

5/7

Collaging Botryllus
— Instruction Manual

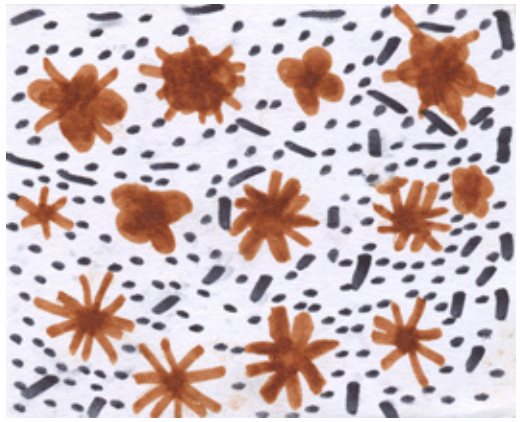


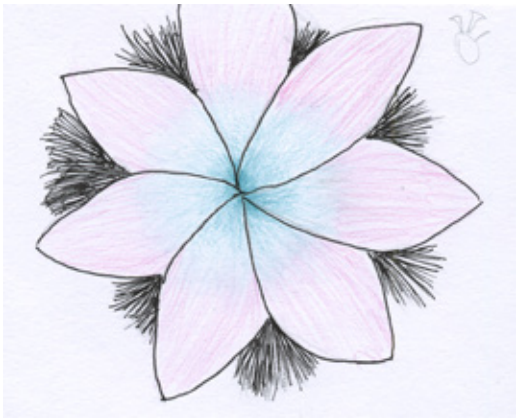
Date: 11 June 2021
Participants: Ecole du Port

A Shifting Form
— Nematostella Manual

Date: 11 June 2021
Participants: Ecole du Port

Collaging Botryllus
— Instruction Manual





Date: 11 June 2021
Participants: Ecole du Port

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Workstation Nice
Marine Models. Drawing Regeneration.

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Irene Kopelman

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Mediation workshop:
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Installation photography:
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This work has been supported by the French government through the UCAJEDI Investments in the Future project, managed by the National Research Agency (ANR-15-IDEX-01), Université Côte d'Azur and the MAMAC Musée d'Art Moderne et d'Art Contemporain.

Thanks to:
Stefano Tiozzo, Alexandre Alié, Sonia Lotito and all staff at the Tiozzo Lab; Eric Röttinger, Aldine Amiel, João Carvalho and all staff at the Röttinger Lab.

Institute de la Mer de Villefranche-sur-Mer (IMEV – SU, CNRS), especially Elisabeth Christians, Alex McDougall, Martine Fioroni, Laurent Gilleta and Maryam Cousin.

Institute for Research on Cancer and Aging, Nice (IRCAN – UCA, CNRS, INSERM), with special thanks to Eric Gilson.

I would also like to thank the team at the MAMAC, especially Hélène Guenin, Laura Pippi-Detrey, Léah Friedman, Steve Simon, and Lélia Decourt.

Pamela Echeverría and her team at Galeria Labor; Jocelyn Wolff, Sandrine Djerouet and everyone at Jocelyn Wolff Gallery; Ayumi Higuchi, Sarah Laouni, Maud Desfachelle, Marta Scelzo, Florent Mattei, Jean Sylvain Marchessou and Mathilde Roman at Pavillon Bosio, Sylvain Lizon and Vittorio Parisi from Villa Arson and Julien Gaertner from Université Côte d'Azur.