**1 ST PRIZE**

**Epiphany, Amazon**

The image was recorded in a remote tributary of the Solimoes River in the Amazon, close to the border between Brazil, Peru, and Colombia. The photograph is part of the research project REVISITED. Anthropologist Christian Vium brings archival photographs from European and American collections back to the areas where they were recorded and then reinterprets them with the descendants of the indigenous peoples portrayed in the original photographs. Together, they analyze the images to understand these early cultural encounters and their significance for posterity. In the Amazon, Vium followed in the wake of the German photographer Albert Frisch, who, in 1867, produced some of the earliest photographs of indigenous peoples on his 1600 km journey along the Solimões River.

Photo: Christian Vium, Associate Professor in Anthropology, Aarhus University.

**More about the research:** [www.christianvium.com](https://eur01.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.christianvium.com%2F&data=05%7C02%7Ccvium%40cas.au.dk%7Cd9242fb864854cb8b58a08dcbdd15df1%7C61fd1d36fecb47cab7d7d0df0370a198%7C1%7C0%7C638593954148983955%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C0%7C%7C%7C&sdata=n6gOw4L6Ne%2FQ6rnfGXe49WBhdhQzOAGZ8nUsb1oAvE8%3D&reserved=0)

**2ND PRIZE  
Six points on a blackboard**   
  
In a world where points can collide in pairs or as triples, what happens when 3 pairs meet, or was it 2 triples? Six points are there on the blackboard and we want to understand the world they live in.

The object of study is an example of a configuration space. Configuration spaces are fundamental objects in mathematics that also occur in, e.g., physics and robotics.

**Photo:** Nathalie Wahl, DNRF Center GeoTop, University of Copenhagen.

**More about the research:** <https://dg.dk/centers/copenhagen-center-for-geometry-and-topology-geotop/>

**3RD PRIZE  
The digestive system of dairy cows**

The photo is from a trial that investigates the ruminal microbiome of young dairy calves when they were supplemented with methane-reducing additives. The aim of the study is to reduce the enteric methane emission by establishing a ruminal microbiome that emits less methane from an early age.

The digestive system of dairy cows transforms inedible plant materials into nutrients vital for the cow. This process begins in the reticulorumen shown in the photo, where products of microbial fermentation are absorbed by the papillae (bottom-half of the photo).

**Photo:** Giulio Giagnoni, Animal Science, Aarhus University.

**More about the research group**: <https://anivet.au.dk/en/research/research-groups/ruminant-nutrition>

**Exposing the overlooked realm of mosses**

This photo shows the vibrant green moss and its reddish \*sporophytes within New Zealand’s temperate rainforest, a place where mosses thrive but remain understudied.

Mosses and other \*bryophytes cover vast areas of our ecosystems, and their contribution to factors such as nutrient inputs or atmospheric impacts through the emission of biogenic volatile organic compounds remains elusive. In the northern hemisphere mosses are known to be an important nitrogen input into the ecosystem, but we know much less about mosses' role in other parts of the world, such as in New Zealand.

\*Sporophytes are the diploid, spore-producing phase in the life cycle of mosses.

\* Bryophytes are non-vascular plants such as mosses, liverworts or hornworts. Bryophytes do not share the same characteristics as vascular plants, for instance they do not have roots or leaf stomata.

**Photo:** Annika Engroff, DNRF Center VOLT, Biology, Ecology, Biogeochemistry, University of Copenhagen.

**More about the research:** [**Center for Volatile Interactions – University of Copenhagen (ku.dk)**](https://volt.ku.dk/)

**A reservoir of a living past**

The photo shows several strands of DNA (light yellow lines) sitting on a calcite surface (background in different tones of pink and purple). The DNA is seen through an atomic force microscope that goes up to the nanoscale level and showcases the fascinating world of DNA interacting with mineral surfaces.

In their research, researchers at the Globe Institute explore the intricate chemistry behind how DNA interacts with and is preserved on minerals. By unraveling these processes, we aim to enhance the recovery of ancient DNA, shedding light on the past of life in our planet.

**Photo:** Carlota Carbajo Moral, Environmental Sciences, University of Copenhagen - Globe Institute.

**More about the research:** <https://globe.ku.dk/research/geogenetics/molecular-geobiology-group/>

**When the ball of yarn is smaller than the needle tip**

Look at these beautiful and tiny “yarn balls”! They are actually not yarn but nanofiber-based micro particles for tunable drug delivery.

Researchers at IDUN have invented a new method where they cut through nanofibrous sheets to fabricate arrays of identical “yarn balls.” The hemispherical particles have a diameter below 100 µm – like the diameter of a hair. These microparticles are unique and can be used for many biomedical applications, such as the delivery of drugs, the attachment of cells, and adhesion to the mucus layer in the gut.

**Photo:** Fatemeh Ajalloueian, DNRF Center IDUN, Biomedical engineering, Technical University of Denmark.

**More about the research:** [Home - IDUN (dtu.dk)](https://idun.dtu.dk/)

**Deep-Sea Life**

Life at the bottom of the deep sea is fascinating and still mysterious. The photograph shows a measuring system and a deep-sea worm on the seabed at a water depth of 4330 m. The seabed plays an important role in the ecological balance of our planet. Deep-sea dwellers have developed unique adaptations that help scientists to better understand life. Their existence also raises important questions about the sustainability and protection of the oceans. Protecting this sensitive ecosystem is vital, since we could lose important insights that could not only broaden our understanding of life on Earth, but also help to better protect our environment.

**Photo:** Frank Wenzhöfer, DNRF Center HADAL, Deep-Sea/Hadal Ecology, University of Southern Denmark.

**More about the reserach:** <https://www.sdu.dk/en/forskning/hadal/people/pi/frank-wenzhoefer>

**Exploring the Secrets to a Healthy Gut**

This image shows an ingestible capsule that can trap liquid within it. Like a submarine, the capsule can replace the air in its "ballast tank" with liquid, and bubbles from this fluid exchange can be seen surrounding the capsule. It is designed to purposely help investigate how the tiny microbes in our gut affect our health. Once swallowed, the capsule moves through the gut and opens up in a specific region to collect fluid-containing microbes. It then seals itself to preserve the sample until it exits the body, allowing its content to be analyzed. This technology offers a non-invasive way to collect gut microbial samples compared to endoscopy.

**Photo:** Gafaru Moro, DNRF Center IDUN, Ingestible devices for gut sampling, DTU

**More about the research:** <https://onlinelibrary.wiley.com/doi/10.1002/admt.202400434>

**Bio-based liquid crystalline polyesters under microscope**

The implementation of bio-based \*polymers in the plastics industry has gained significant attention in recent years. Consequently, there is a particular focus on testing and assessing novel bio-based monomers generated through biological processes for their conversion into polymers. Among the monomers synthesized within the \*UPLIFT project, 4-hydroxyphenylacetic acid (4-HPA) is of particular interest.

The picture reveals the complex microscopic pattern of a bio-based liquid crystalline polyester that is the result of 4-HPA polymerization, as captured by a polarized optical microscope at 500 times magnification.

**Photo**: Matina Terzi, Danish Polymer Centre, DTU.

**More about the research**: <https://upliftproject.eu/>

\*A polymer is a substance consisting of very large molecules called macromolecules, which are composed of many repeating subunits called monomers

\*The EU Project UPLIFT focuses on developing a sustainable approach to food and drink packaging within the European Union.

**When Science Fails, Art Prevails**

Failure is part and parcel of the research journey, but a disappointment can make you smile when it is transformed into a striking piece of abstract art!

The unexpected art is the result of a failed heterogeneous integration of \*gallium arsenide—a semiconductor known for its exceptional optical properties—onto silicon.

When combined, these materials create a promising platform for practical quantum photonics integrated circuits, which have potential applications in quantum communication and quantum computation.

**Photo:** Hanna Salamon, DNRF Center Hy-Q, Quantum Photonics , University of Copenhagen.  
**More about the research:** <https://hy-q.nbi.ku.dk/>

**Tiny Titans 3D Journey**

The photo captures an intact mouse embryo frozen in time and space.

The fluorescent signal highlights every single motor neuron in the organism. Motor neurons are specialized cells that transmit impulses between the brain and muscles, allowing us to move, speak, and smile. By making the embryo transparent, researchers can trace and reconstruct motor nerve growth in 3D with high precision.

Embryonic development requires a detailed road map that guides cells to their final destinations, roles, and functions. Understanding these processes can help develop new therapies for various neurological disorders and spinal cord injuries.

**Photo:** Josef Lavický, Alena Salašová. Developmental neurobiology. PROMEMO, Aarhus University.

**More about the research:** https://www.eurobioimaging.eu/news/motor-neuron-development-revealed-using-multiple-imaging-techniques-and-3d-reconstructions/

**Sleeping beauties in the seabed**

Microscopic algae such as diatoms can only thrive at the surface of the ocean. At the end of the growth season, they form aggregates that sink down into the water column like snowflakes. Darkness and pressure in the deep ocean are believed to doom diatoms to death. To explore the limits of life under these harsh conditions, researchers at HADAL collected deep-sea sediments and found that the diatoms therein resumed growth when exposed to light. Hence, diatoms possess survival strategies that allow them to resurrect from what seems to be their grave in the deep ocean.

**Photo:** Peter Stief, DNRF Center HADAL, Department of Biology, University of Southern Denmark.

**More about the research**: <https://www.sdu.dk/en/forskning/hadal>

**Fernbed**

Over 2000 years ago, the cremated bones of a small child and a teenager were placed together in an urn. The grave was lined with cowhide and ferns, and the image shows the green fragments of a Roman bronze vessel that have fallen among the ferns. The grave of the two young individuals was located on a larger burial site at Hedegård, Central Jutland. The burial site is part of the research project "Under Pressure," which investigates how societies react when confronted with a significant external military threat.

**Photo:** Maja Theodoraki, Museum Midtjylland

**More about the reserach**: (In Danish) [Moesgaard Museum | 2000 år gammel krigerkvinde begravet ved militært centrum i Midtjylland](https://www.moesgaardmuseum.dk/nyheder/2000-aar-gammel-krigerkvinde-begravet-ved-militaert-centrum-i-midtjylland/)