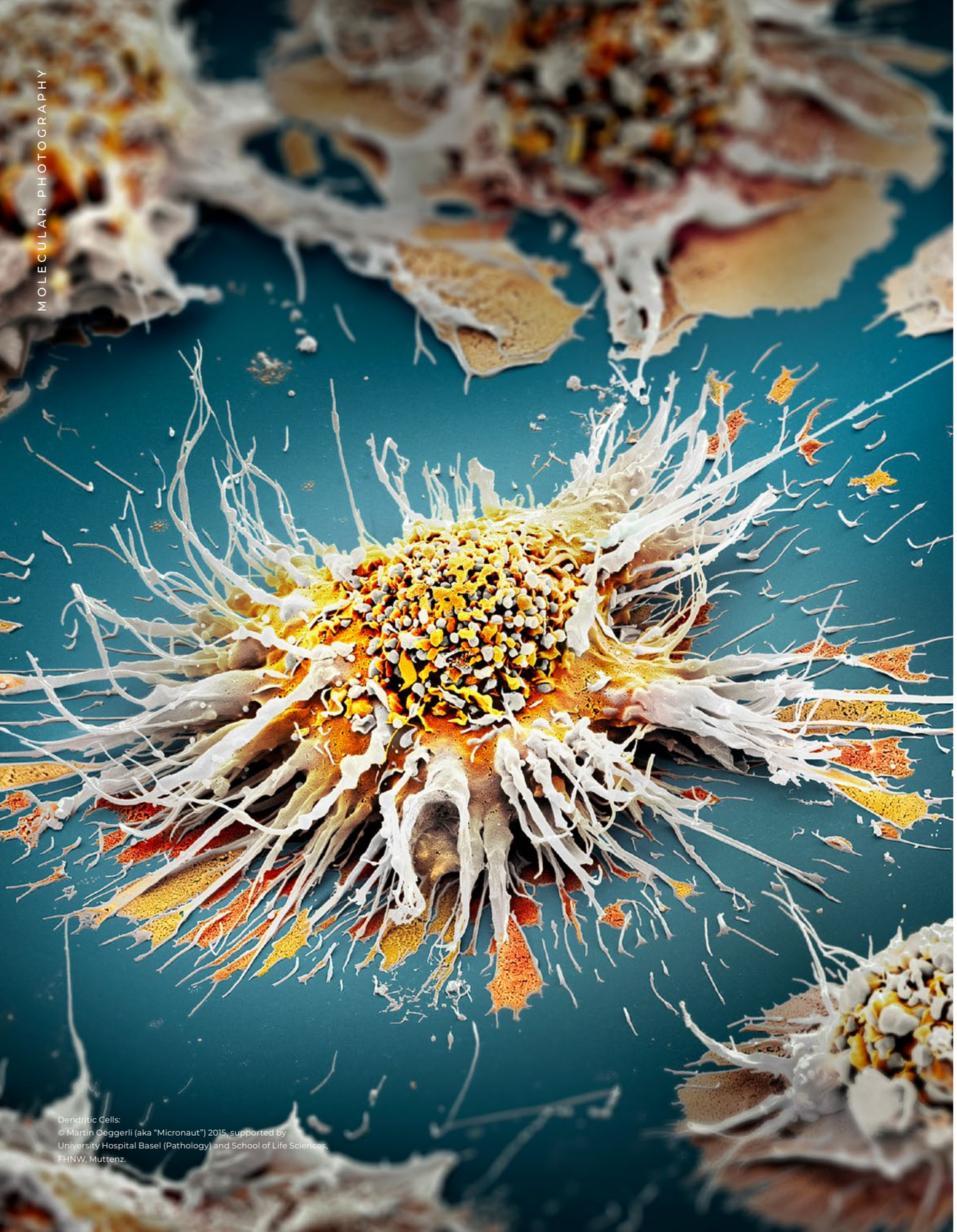


Dendritic Cells:
© Martin Oeggerli (aka "Micronaut") 2015, supported by University Hospital Basel (Pathology) and School of Life Sciences, FHNW, Muttenz.

The Micronaut – Explorer of Invisible Worlds

MOLECULAR PHOTOGRAPHY

Author — Marcel J. Scacchi

What if the smallest structures of life could be seen as landscapes, sculptures, even works of art? Swiss molecular biologist and science photographer Martin Oeggerli makes the invisible visible. Working under the name "Micronaut", he ventures deep into the microscopic world, transforming bacteria, pollen, cells and other structures beyond the reach of the human eye into spectacular images that bridge science and art.

From cancer researcher to science photographer

Oeggerli studied biology at the University of Basel from 1994 to 2000 and earned his diploma in 2002 under David G. Senn. He went on to complete a PhD in molecular pathology and cancer research under Guido Sauter in Basel in 2005. His move into photography came almost by chance. While still working in cancer research, a colleague asked him to create colorized scanning electron microscope (SEM) images for a company's annual report. What began as a favor – and then a hobby – gradually developed into his life's work.

From 2006 onward, Oeggerli worked as a postdoctoral researcher at University Hospital Basel on a project funded by the Swiss National Science Foundation. At the same time, he began establishing himself as a science photographer and worked as a consultant for a laboratory specializing in scanning electron microscopy. For years, science and photography developed side by side, until he ultimately devoted himself fully to his visual work in 2015.

The Micronaut method

As Micronaut, Oeggerli explores some of the smallest organisms and structures on Earth: bacteria, pollen grains, insect eggs, mites and cellular structures. His primary tool is scanning electron microscopy (SEM), a technique that uses electron beams rather than light and can magnify specimens up to 500,000 times their actual size. Yet the microscope provides only part of the image. SEM records surface topography in grayscale; it does not capture color. Oeggerli therefore meticulously colors his images in post-production, in a process he calls "coloration." Combining scientific accuracy with painterly intuition, this painstaking work can take hours or even days for a single image. The results are at once scientifically revealing and visually surreal: monumental portraits of organisms and structures far too small for the naked eye to perceive in such detail. In Oeggerli's hands, the microscopic world becomes an unfamiliar landscape – strange, intricate and unexpectedly beautiful.



Martin Oeggerli

Artist, life sciences, award-winning photographer

Martin Oeggerli, born on March 7, 1974, in Riedholz, Switzerland, occupies a rare space between science and art. Trained as a molecular biologist, he has spent the past two decades transforming the invisible microscopic world into images of extraordinary beauty. He publishes his work under the name "Micronaut" – an explorer of invisible worlds.

Recognition and reach

Oeggerli's breakthrough came in 2009, when *National Geographic* published his first feature, "Love Is in the Air," exploring the extraordinary forms of pollen. He has described it as the moment he truly became a scientific photographer. Since then, his work has appeared in publications including the *BBC, GEO, Nature, Science, Cell, Vogue* and, repeatedly, *National Geographic*. His honors include two EMBO Journal Best Scientific Cover Image awards (2008 and 2010), two Bild der Wissenschaft German Prizes for Scientific Photography (2009 and 2011), and International Photography Awards in the "Special: Micro" category.

In 2022, he received the Lennart Nilsson Award, one of the most prestigious distinctions in scientific photography. His imagery has also reached audiences far beyond scientific publications: in 2020, he designed two special-edition postage stamps for Swiss Post, and his TED Talk, "Beautiful Monsters," brought his microscopic universe to an international audience. Artist Ai Weiwei has described his images as "innovative works of art."

I try to make things visible that would otherwise remain unseen.

Making the invisible matter

At the heart of Oeggerli's work is a simple ambition: to replace fear of the unknown with curiosity and wonder by revealing the hidden beauty of nature's smallest designs.

Today, based in Basel and working through Micronaut GmbH, he continues to collaborate with art curators and researchers around the world. By combining scientific rigor with a distinctive artistic vision, he gives visual form to biology, immunology and the microbiome – making complex science tangible and emotionally resonant for a broad audience.

This ability is particularly relevant to the questions at the heart of AVOLA. Oeggerli's exploration of the microscopic architecture of the human body – from the oral cavity and gut to immune structures and microbial communities – creates a powerful visual connection to microbiome science and oral-systemic health. His work does more than document what science discovers: it allows people to see it. In doing so, the Micronaut turns an invisible world into something we can understand, appreciate – and perhaps even care about.

Muscle Stem Cell:
© Martin Oeggerli (aka "Micronaut") 2021, with S Dilbaz, G Santos and C Handschin, Biozentrum and Bio-EM Lab, University Basel, and University Hospital Basel (Pathology).

