

*Beyond Resolution* — How Do We Visualize What We Cannot See?

The challenging relationship between art and science is the basis for the *Art Meets Science* program at MDI Biological Laboratory. How does an artist experience the scientific process? How does the artistic mind use the findings and discoveries of scientific experiments? Artists and scientists strive to grasp the world around us, with the hopes of understanding nature and its complex patterns and mechanisms. Both scientists and artists grapple with the problem to visualize what they discover — how to bridge the gap between knowledge and communication.

Artist Michael Takeo Magruder spent a year collaborating with MDI Bio Lab, immersing himself in scientific research, exchanging ideas with scientists, and exploring their questions and methods. In turn, he used his own artistic approach to create thought-provoking works that challenge and inspire. Art and Science, Art about Science, or Art in Science?

From the start, Michael was captivated by the advanced imaging techniques used at MDI Bio Lab, a leader in microscopy and research on tissue regeneration and blood vessel formation. Our scientists shift the frontiers of visibility by building cutting-edge microscopes, allowing previously unseen structures to be revealed and thereby developing an understanding of biological mechanisms.

Michael worked alongside the explorers of the microscopic world at MDI Bio Lab. He translated and transformed their methods and their findings into his world of technology and art. The artwork in this exhibition is the result of his artistic journey, showing the outcome of his experiments, how he visualizes his findings, and how artwork communicates an artistic analysis of scientific data and methodology. His art confronts us with other ways to see the world. It makes us reflect on our experiments, challenges our assumptions, and sheds new light on the scientific endeavor.

— Hermann Haller, M.D., President, MDI Biological Laboratory



Michael Takeo Magruder (b. 1974, US/UK, [www.takeo.org](http://www.takeo.org)) is a visual artist and researcher whose practice utilizes Information Age technologies and systems to examine our networked, media-rich world. In the last 25 years, his art has been shown in over 300 exhibitions in 35 countries, and has received extensive support within the UK, US, and EU. He is represented by Gazelli Art House in Mayfair, London.

Takeo's recent projects include *Imaginary Cities*, a solo exhibition creatively exploring digital maps drawn from the British Library's *One Million Images from Scanned Books* collection. In 2020, he was the first ever artist-in-residence at the UK National Archives where he reflected upon the institution's ongoing digital transformation and what constitutes an archive in the 21st century. During the COVID-19 pandemic, Takeo was virtual artist-in-residence at The Henry Luce III Center for the Arts & Religion in Washington, DC where he investigated social and ethical issues surrounding the international health crisis. He is presently MDI Biological Laboratory's inaugural artist-in-residence and has developed a new body of artwork in dialogue with the institute's world-class research community for its *Arts Meets Science* program.

**ART MEETS SCIENCE:**

For over 125 years, the Mount Desert Island Biological Laboratory has been a hub of scientific discovery on the coast of Maine. Our researchers study how nature works at the cellular and molecular level to better understand disease and improve human health. Our Art Meets Science program explores how both art and science help us understand the world. By comparing creative and scientific approaches, we gain fresh insights, improve communication, and spark meaningful dialogue.

This initiative creates space for scientists, students, and the community to explore how artistic and scientific thinking complement one another — and how both can lead to deeper understanding. Together, we'll study the science of art, the art of science — and learn to see the world in new ways.

**MDI** Biological Laboratory

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[mdibl.org](http://mdibl.org)

# Beyond Resolution

Michael Takeo Magruder

MDI Biological Laboratory

April 25–October 24, 2025

*Beyond Resolution* is an exhibition by British-American visual artist Michael Takeo Magruder exploring the commonalities and emergent possibilities that reside at the intersection of art and science. It represents the culmination of the artist's year-long residency at MDI Biological Laboratory and showcases the creative outcomes of his collaborative exchanges with the institute's distinguished scientific community.

The focus of the exhibition is two newly commissioned artworks produced using the leading-edge systems of the Laboratory's Light Microscopy Facility. Each work is generated from actual scientific research data that has been transformed using Artificial Intelligence (AI) models and techniques derived from contemporary digital arts practice. These aesthetic processes render spatial and temporal details that extend beyond the hard limits of traditional imaging technologies, allowing viewers to peer beyond the horizons offered by even today's most advanced microscopes.

On the one hand, using AI in this fashion is cutting edge. On the other, it taps into a long history of artistic, philosophical, and scientific *speculation* — from the Latin verb *specere*, meaning to look at or see. During the 15<sup>th</sup> century, Renaissance masters including Piero della Francesca, Paolo Uccello, and Leonardo da Vinci utilized mathematical calculations of linear perspective to create newly realistic masterpieces. In the 17<sup>th</sup> century, the philosopher René Descartes published extensively on the nascent science of optics, while the philosopher Baruch Spinoza made his living as an accomplished lens grinder for microscopes and telescopes. And it was Galileo's practical advances in telescope design that enabled his astronomical discoveries.

By using AI to imagine what lies beyond the present limits of microscopy, Michael challenges scientists to step back from the bench, as it were, and consider possibilities they have not yet observed. There is an intrinsic risk to speculating about the unseen — just think of market speculation — but in the hands of committed scientists, risk can be responsible, indeed indispensable. Scientific speculation continually seeks the balance of confirmation, turning projection to validation. What Takeo has generated may be beyond resolution today, but not for long.

— Prof Aaron Rosen, Ph.D. (Cantab)



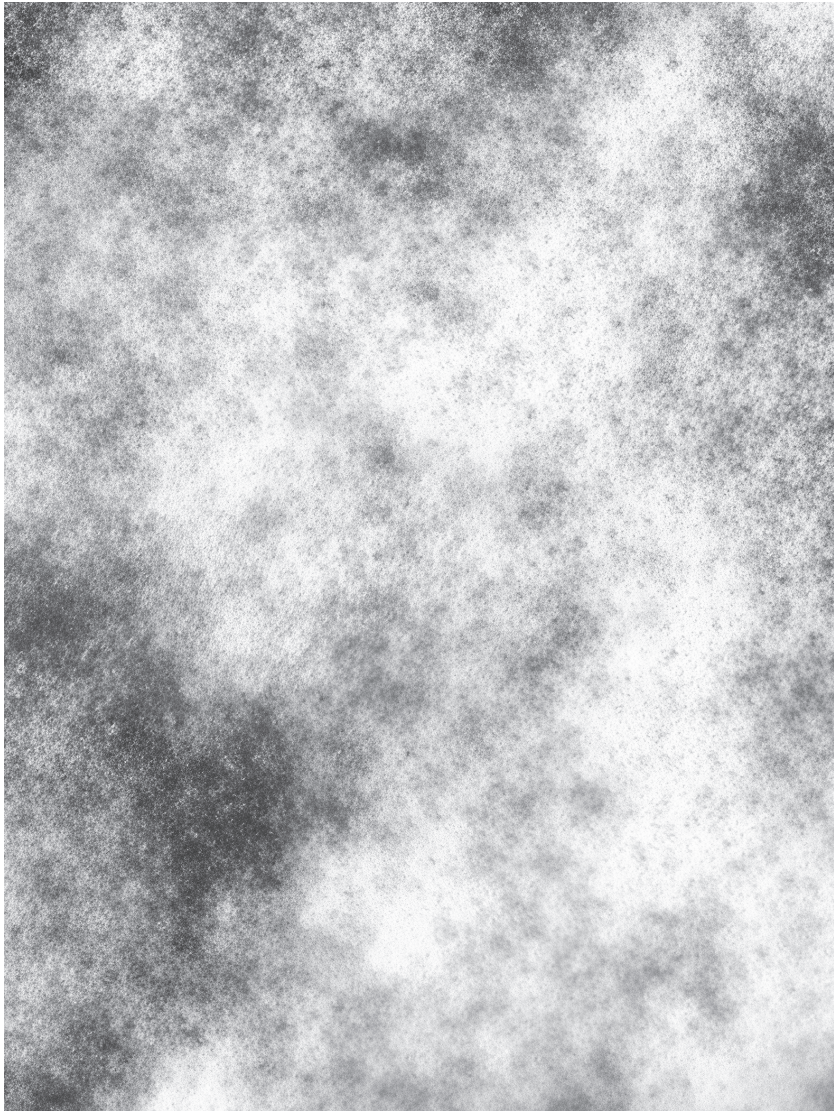


Michael Takeo Magruder  
in dialogue with Cory Johnson, Ph.D., & Hannah Somers (Haller Lab)

*hiPSC Renal Organoid [expanded]*, sequence of 8 digital monoprints on archival 100% cotton rag, 83 x 63 cm (each, framed)

Source data: single ultra-high-resolution image stack (8192x8192 pixels) of a hiPSC-BJFF6 renal organoid captured at 63X using a Zeiss LSM 980 — Airyscan 2 confocal microscope system

(Image 1 of 8) 1X aesthetic visualization of raw data

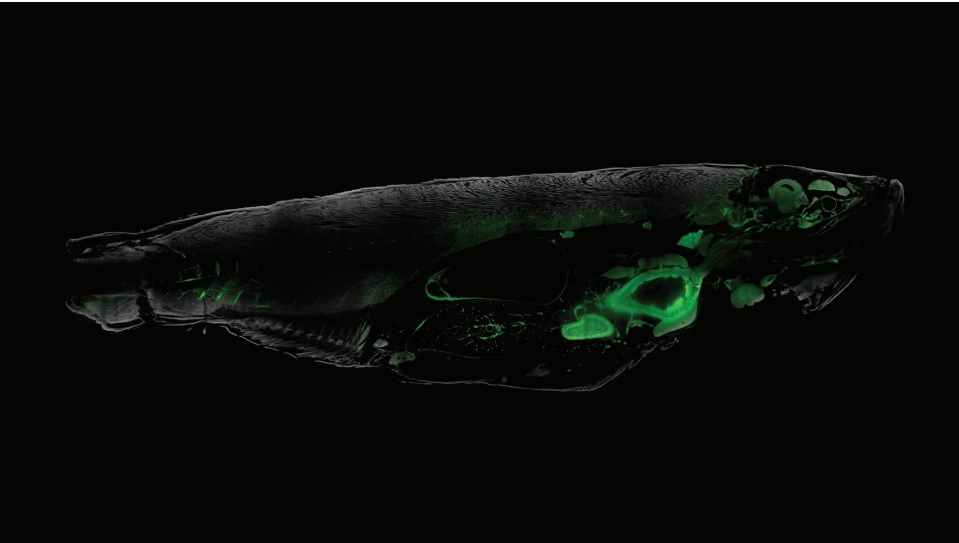


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(Image 8 of 8) 16,384X AI-magnified visualization generated from the central 4 pixels of raw data

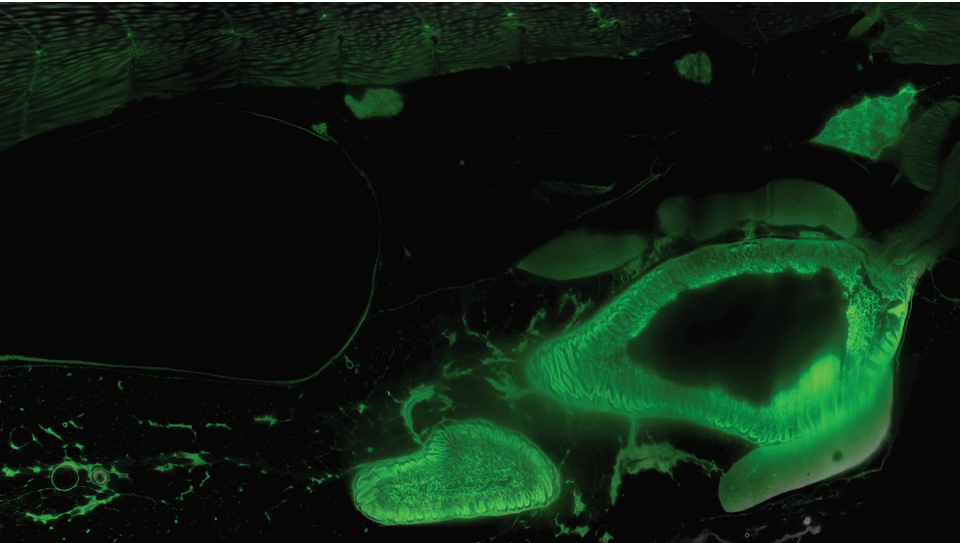


Michael Takeo Magruder  
in dialogue with Marko Pende, Ph.D. (Murawala Lab)

*Casper Zebrafish [expanded]*, 8K-HDR digital video sequences, duration variable

Source data: 2,635 image-slice sequence (1.6TB) of a whole tissue-cleared adult Casper Zebrafish captured at 4X using MDI Biological Laboratory’s custom MesoSPIM light-sheet microscope system

still image from whole-body video sequence



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Source data: 2,635 image-slice sequence (1.6TB) of a whole tissue-cleared adult Casper Zebrafish captured at 4X using MDI Biological Laboratory’s custom MesoSPIM light-sheet microscope system

still image from internal-detail video sequence