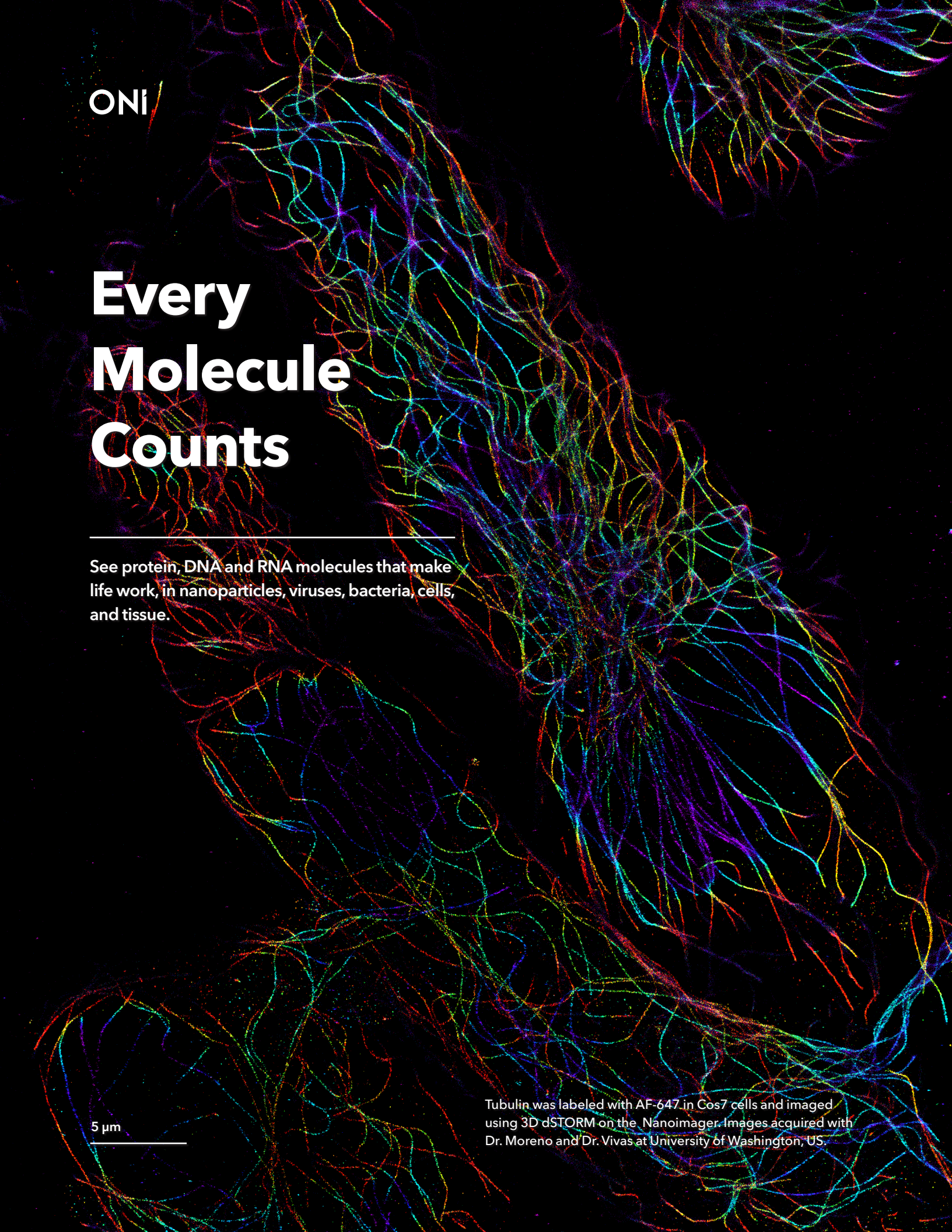
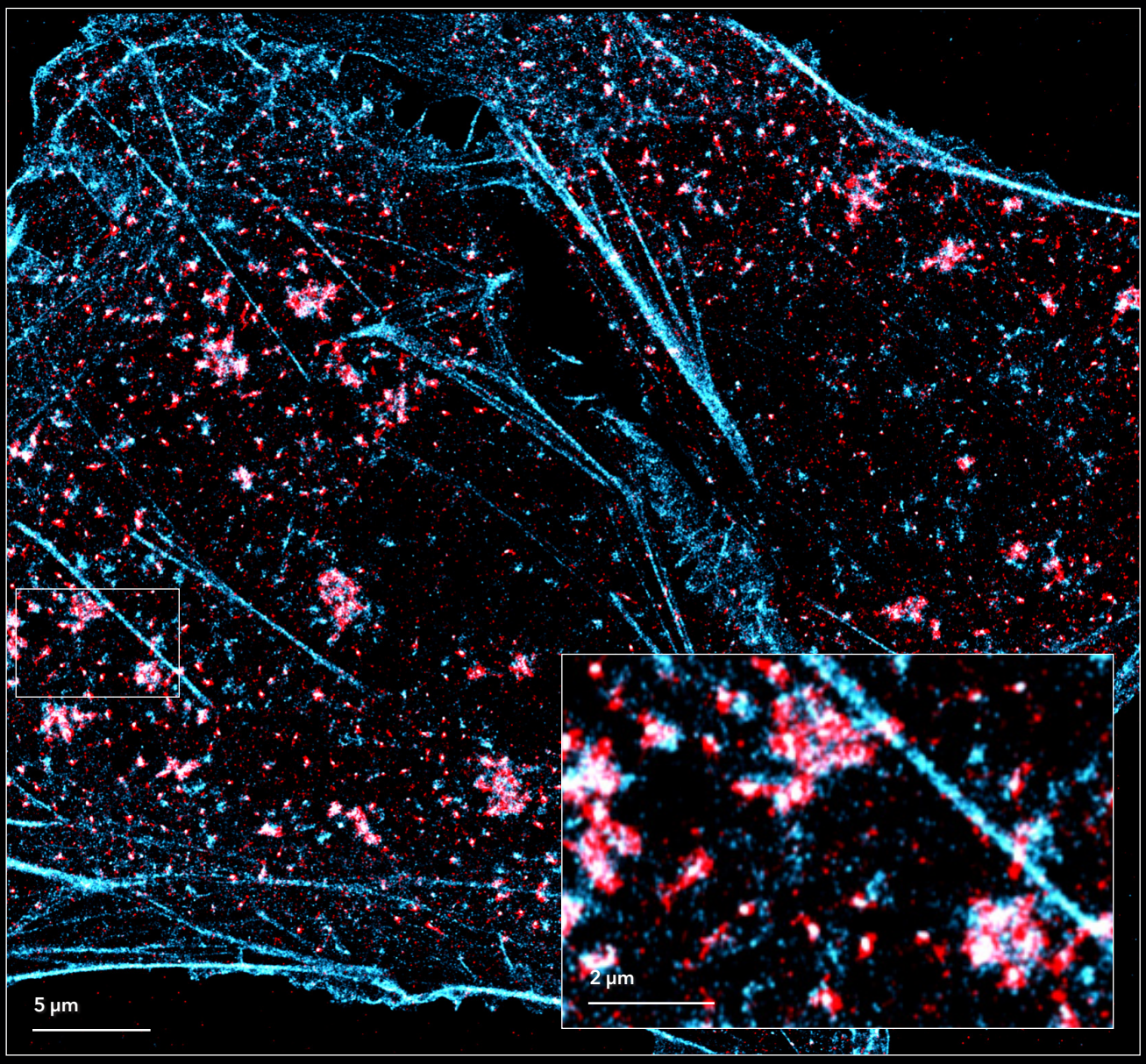
ONI

Every Molecule Counts

See protein, DNA and RNA molecules that make life work, in nanoparticles, viruses, bacteria, cells, and tissue.



Tubulin was labeled with AF-647 in Cos7 cells and imaged using 3D dSTORM on the Nanoimager. Images acquired with Dr. Moreno and Dr. Vivas at University of Washington, US.



dSTORM image of actin stained with Phalloidin-AF647 and nucleoprotein-AF555 in Ebola virus-like particle transfected cells. Virus nucleoprotein (red) colocalizes with the disrupted actin network (blue). Data acquired in collaboration with Prof. Stephan Becker, in a BSL-4 containment lab at Philipps-Universität, Marburg, Germany.

Our Story

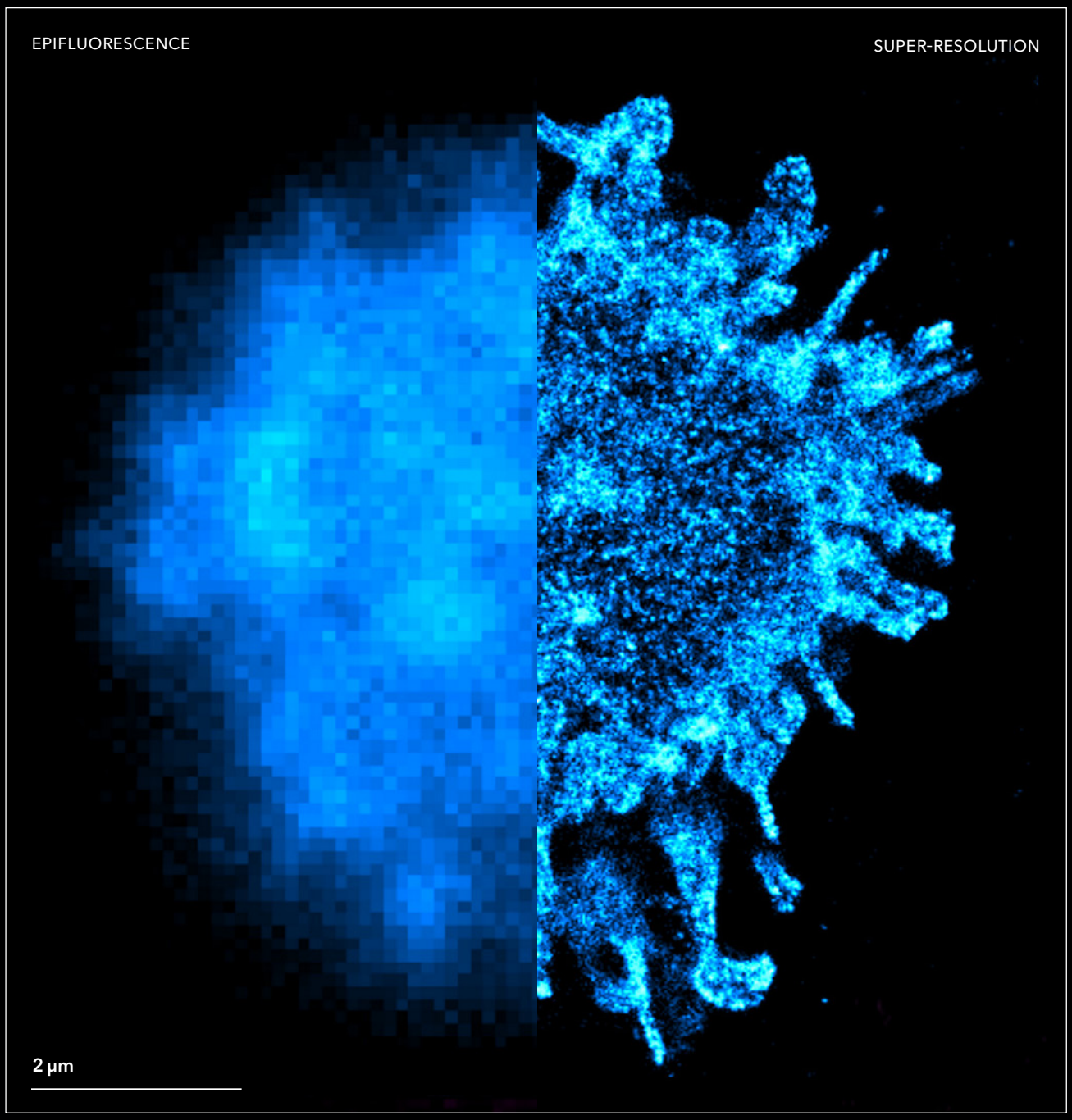
Founded in 2016, ONI is a leading and rapidly growing biotech company that is redefining the boundaries of scientific discovery through powerful tools for single molecule imaging.

The Nanoimager, is the world's first benchtop super-resolution microscope, capable of visualizing, tracking, and quantifying molecules in living cells with 20 nm resolution.

Everyone at ONI, from scientists and engineers to manufacturing, sales and marketing, wants to create innovative technologies to empower researchers worldwide.

Our mission is to accelerate human discovery and fight disease by enabling everyone to see and understand the microscopic details of life.

ONI is making super-resolution microscopy accessible and easy to use.



BCR labeled with AF647 in B cells imaged using epifluorescence or dSTORM on the Nanoimager. Data from Dr. Joseph Brzostowski, NIH, US.

Why Super-resolution?

Throughout history, scientists have been constrained by the limited resolution of light microscopy due to the diffraction of light.

Super-resolution microscopy uses various techniques to break the diffraction limit and achieve resolutions one order of magnitude higher than traditional light microscopy. These approaches enable researchers to image living samples and resolve features with nanometer precision.

Single molecule localization techniques, including dSTORM and PALM, have made it possible to study a range of biological phenomena with unprecedented details, bringing into focus the cellular and molecular details that had once been invisible.

Super-resolution is making strides in:

- Nanoscale Morphology
- Biomarker Quantification
- Single Particle Tracking
- Spatial Distribution

When the nanoscale comes into focus.

We provide a complete ecosystem by providing consumables (bioware), hardware, and software for a range of applications.

A complete benchtop super-resolution experience.

Prepare, Image, and Analyze

We strive to offer the complete solution to help anyone throughout their super-resolution imaging journey – to prepare samples for super-resolution imaging and extract the relevant information to make the most of your data.

QUANTIFY YOUR SAMPLES, INSIDE AND OUT

EV Profiler: a complete solution to image and characterize EVs. Quantify EV populations down to single particles and biomarkers.

Reagent catalog: ONI is providing solutions for seamless sample preparation for super-resolution imaging.

ACCESSIBLE BENCHTOP SUPER-RESOLUTION IMAGING

The Nanoimager is the first compact super- resolution microscope, it offers various imaging modes including dSTORM, PALM, and smFRET.

Precise and easy to operate, it has never been easier to get the most out of fluorescence microscopy, both on fixed or live samples.

ACQUIRE, ANALYZE, QUANTIFY, & COLLABORATE

NimOS is a complete software suite that enables you to control every aspect of the Nanoimager, from laser source selection to exposure time.

CODI is your ultimate analysis platform, storage system, super-computer and collaboration suite.


ONi

Small and Powerful

The Nanoimager is a powerful super-resolution microscope with a unique form factor - with a footprint smaller than an A4 sheet of paper and a height of 15 cm.

Key features include: real-time autofocus, temperature control for live imaging, drift correction with nanometer precision, microfluidics compatibility and 20 nm resolution.

STABLE

Achieve beautiful super-resolution images anywhere you like, from your benchtop, desk or inside the tissue culture hood. There is no need for an optical table or dark room. Permanently aligned and vibration-free.

ROBUST

The Nanoimager is made to last. Nanoimagers are built by ONI in-house. If we are not happy with an off-the-shelf part, we make our own. Powerful lasers with up to 1W laser power at the source.

ACCESSIBLE

Super-resolution is a combination of optics, chemistry, and biology. We want you to focus on your experiment without worrying about the physics behind it. Sample preparation, acquisition, and analysis are constantly improving to suit your needs.

VERSATILE

Live cells, fixed samples, dSTORM, PALM, PAINT, single particle tracking, TIRF, epifluorescence, HILO, swappable objectives...one instrument, many options. If you want customization, we offer an open platform with a Python interface.

Introducing the Nanoimager.

Nanoimager Technical Specifications

PRODUCT DIMENSIONS

Nanoimager
21.5cm (w) x 21.5cm (d) x 15.5cm (h)

Light Engine
21.5cm (w) x 42.0cm (d) x 45.0cm (h)

IMAGING TECHNOLOGIES

2D and 3D SMLM: dSTORM, PALM, DNA-PAINT with 20 nm resolution in XY*

Total internal reflection fluorescence (TIRF), objective-based. Depth: 488 nm (216 nm), 561 nm (248 nm), 640 nm (283 nm)

Single-particle tracking (SPT)

Förster resonance energy transfer (FRET)

FOCUS Z-LOCK

Z offset +/- 10 µm from coverslip

Rapid and precise stabilization of microscope focus, locking technology to minimize Z-drift.

TEMPERATURE CONTROL

Running temp 30-32°C
Heating up to 42°C
1.5 - 2 hours warm up

Precise temperature control to keep microscope at a stable temperature. Ideal for live cell imaging, and SPT.

ILLUMINATION CONTROL

Select illumination angle: 0°-65°

Flat-field homogeneous laser illumination | Epifluorescence | HILO | TIRF | LED array for bright-field imaging

POWERFUL LASERS

4 lasers and 2 channels (dichroic mirror split at 640 nm)

Power at source: 405 nm (1 W), 488 nm (1 W), 561 nm (750 mW), 640 nm (1 W)
Power at sample: 405 nm (15 mW), 488 nm (250 mW), 561 nm (250 mW), 640 nm (250 mW).

Continuous laser, density: 4 kW/cm^2 (0.24 kW/cm^2 for UV)

CAMERA & TEMPORAL RESOLUTION

Hamamatsu Orca Flash4.0 v3 camera

Frame rate (full FOV): up to 10 ms / 100 Hz
Cropped FOV: up to 1 ms / 1000 Hz
RMS read noise: 1.6

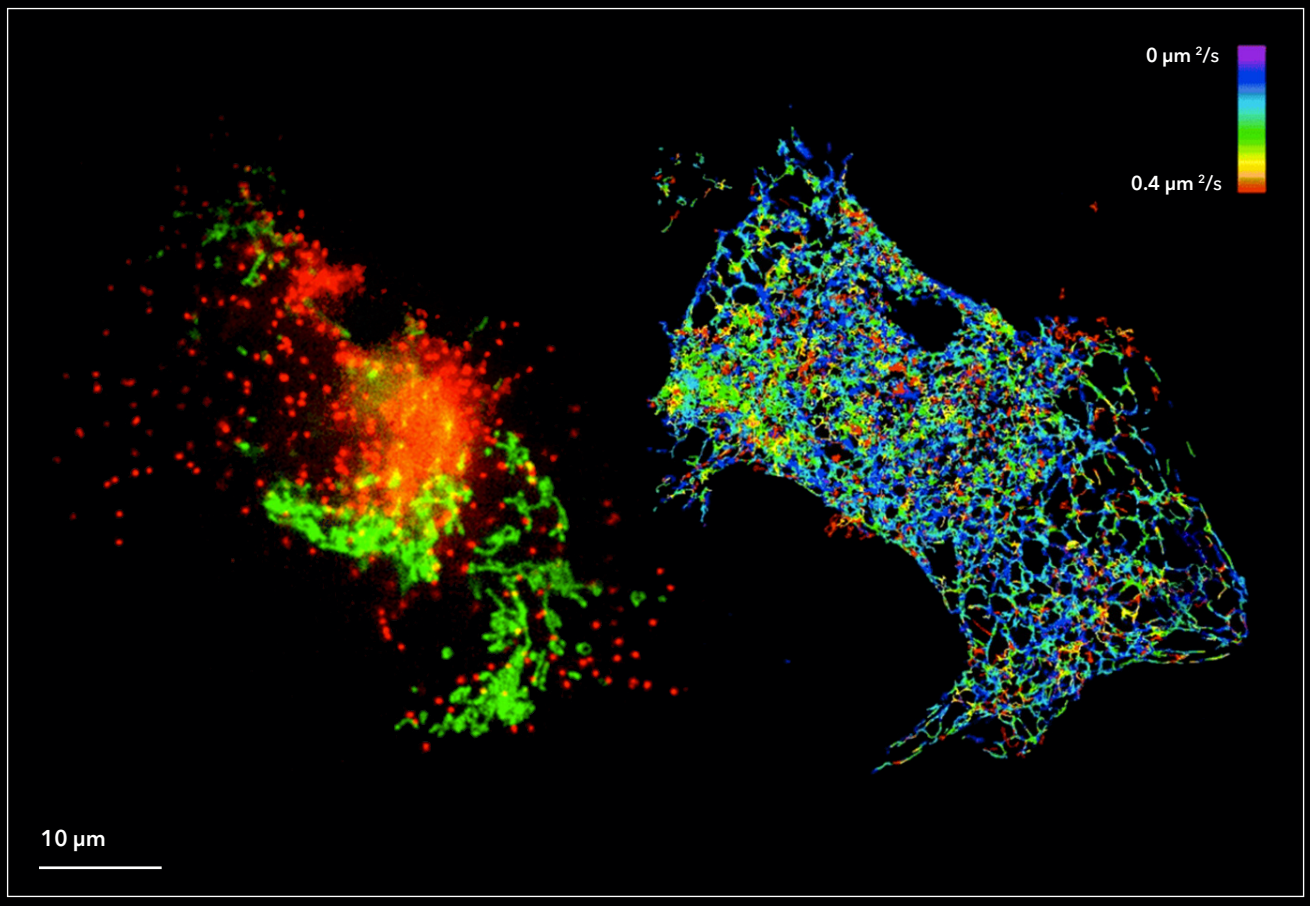
OBJECTIVES & FIELD OF VIEW

Standard: 100X NA 1.45
Optional: 60X NA 1.42, 40X NA 0.75 or NA 0.6, 20X NA 0.45**
FOV (100X): 50 µm x 80 µm

Sample stage: 17.5 x 17.5 x 5 mm XYZ travel range

*Better resolution may be possible
**Consult with ONI for objective compatibility options

A compact and stable microscope.



PDZD8 protein (red) and mitochondria (green) labeled in Cos7 cells. PDZD8 tracks (color-coded based on the diffusion coefficient) show the protein walking along the Endoplasmic Reticulum. Data from Dr. Xufeng Wu, NIH, Bethesda.

One instrument, evolving possibilities.

Imaging Techniques

If you are unsure which imaging technique to use to answer your biological questions, the Nanoimager supports a range of techniques for single-molecule localization and tracking.

Image quality can be enhanced by changing the illumination angle at the click: Epifluorescence, HiLo, or TIRF.

STORM

Relies on the stochastic activation of single fluorophores that blink from "off" to "on", and quickly back to "off". The process is repeated many times, activating just one molecule within a diffraction-limited region at a time.

PALM

Uses photoactivatable fluorophores to resolve spatial details of tightly packed molecules. Once activated, fluorophores emit for a short period but eventually bleach. The laser stochastically activates fluorophores until all have emitted.

smFRET

The emission energy of a donor fluorophore is transferred to an acceptor, which subsequently fluoresces when in close proximity. It enables distances between single molecules to be measured at a scale of 1-10 nanometers.

SINGLE PARTICLE TRACKING

Allows the motion of individual particles to be followed in vitro or in living cells, to obtain information on their dynamic behavior over time. Trajectories can be extracted with a resolution of up to milliseconds.

PAINT

Single-molecule localizations achieved using transient binding of fluorophores to targeted proteins. PAINT is commonly performed with DNA strands < 10 nt, and it can reach spatial resolutions of 10-30 nm.

ONI Training Kit™: dSTORM

LEARN THE FUNDAMENTALS

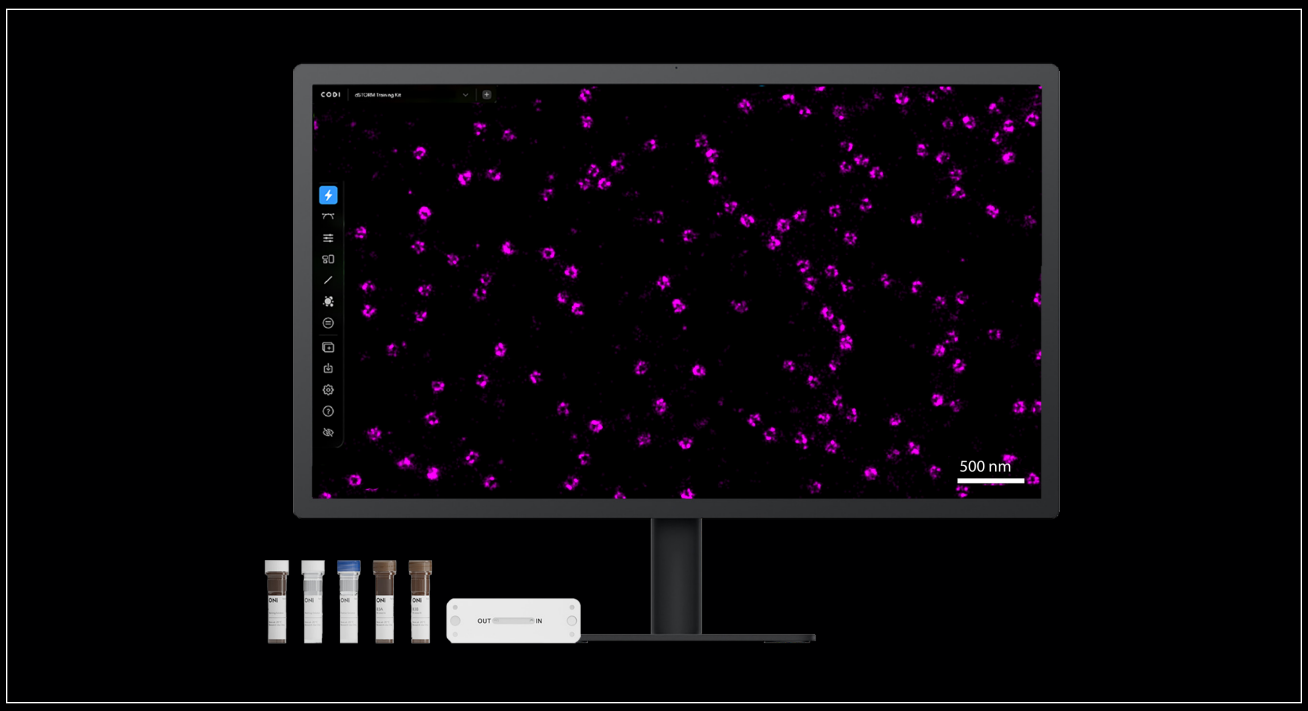
The dSTORM Training Kit provides a simple workflow for new and existing users to learn the fundamentals of single-molecule localization microscopy. Understand sample preparation for dSTORM imaging, prepare a nuclear pore sample for dSTORM with optimal reagents, and gain confidence before experimenting with your own samples.

ONI Discovery Kit™: dSTORM in cells

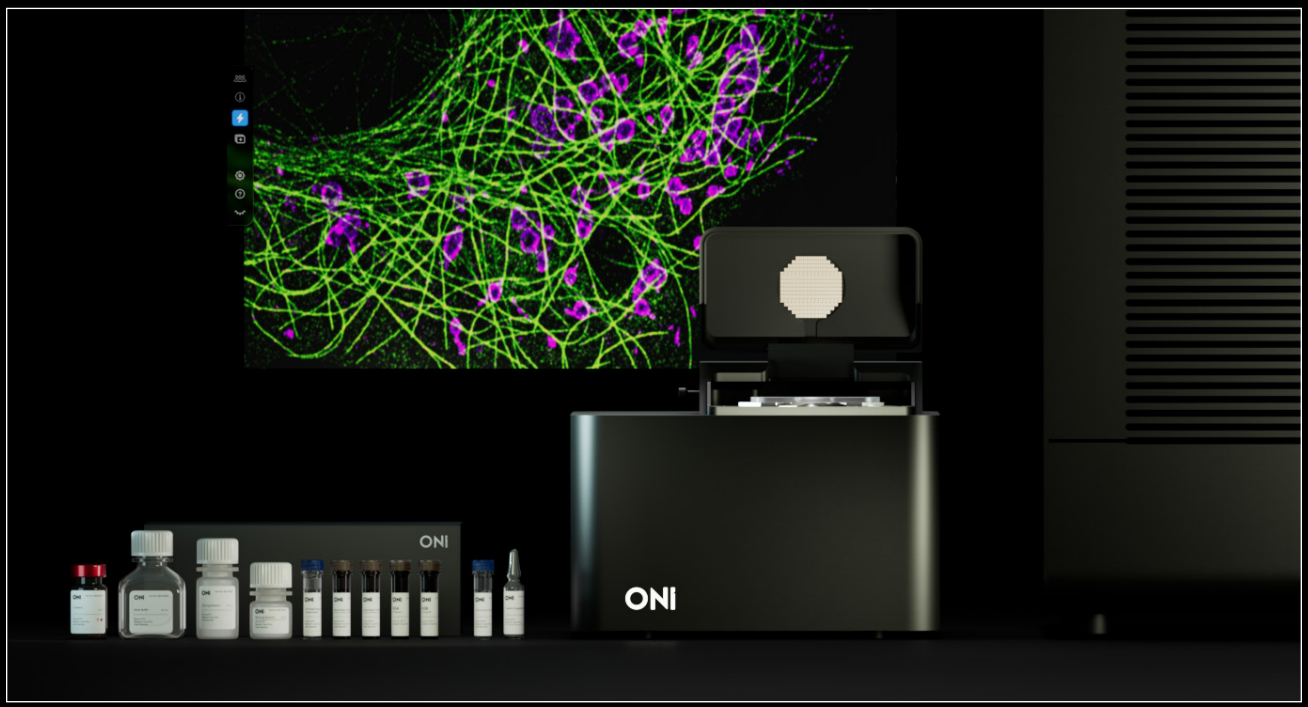
PREPARE SAMPLES WITH EASE

The dSTORM Discovery Kit provides a modular workflow to optimize immunofluorescent labeling of your favorite proteins in cells. Label targets with your own primary antibodies, the kit provides different fixatives and reagents to prepare samples, including specific secondary antibodies conjugated with best-in-class dSTORM fluorophores for two color imaging.

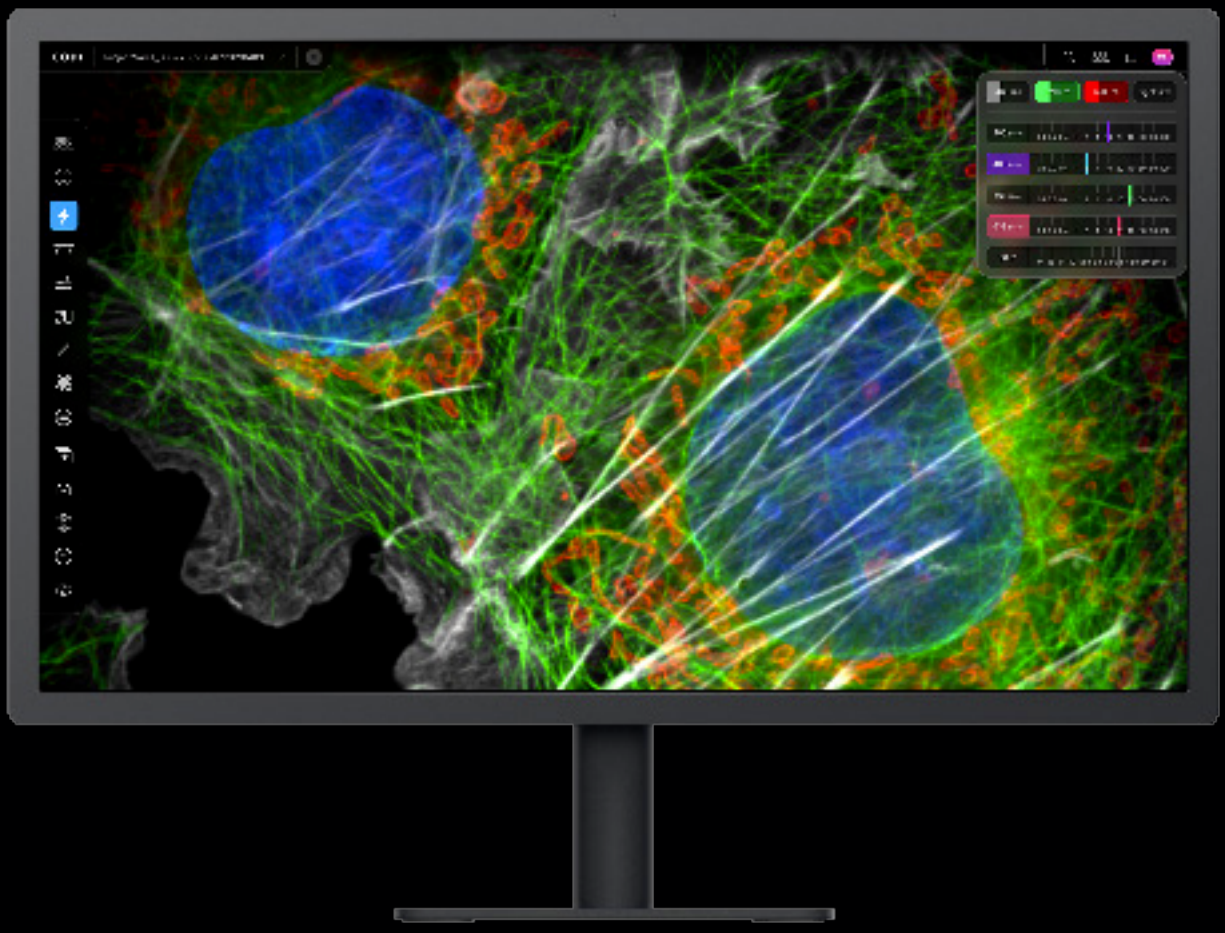
Kits to prepare for super-resolution.



The ONI Training Kit™: dSTORM provides fixed mammalian cells and reagents to stain nuclear pores, and training materials to guide users through dSTORM imaging.



The ONI Discovery Kit™: dSTORM in cells allows you to label your favorite proteins in cultured cells. You provide the cells and custom antibodies, we provide the rest!



ONI's collaborative discovery software (CODI)

NimOS

ACQUISITION, INSTRUMENT CONTROL, AND FILTERING

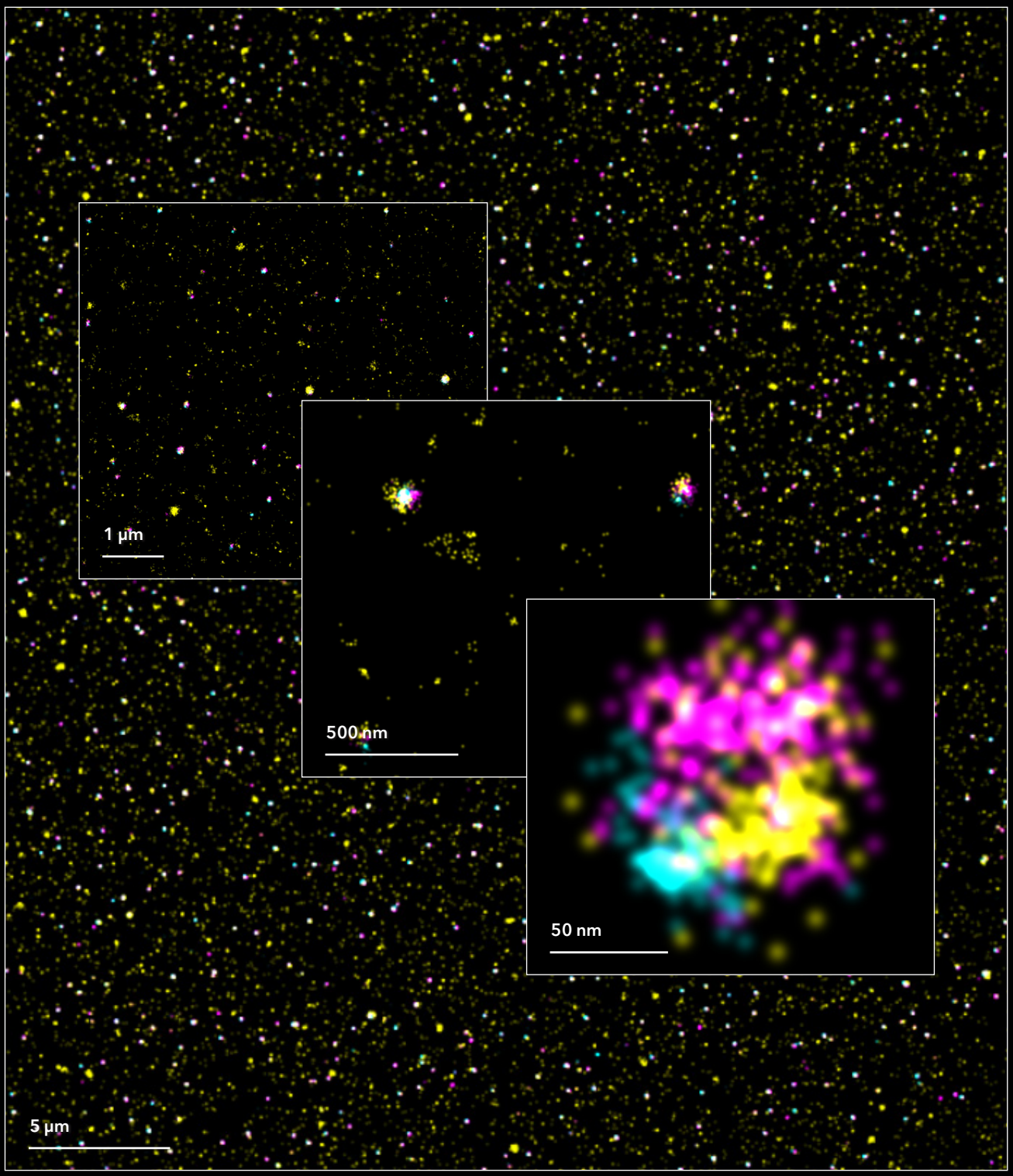
It is quick and easy to acquire the data you need using our dedicated Nanoimager software. NimOS is a complete software suite which enables you to control every aspect of the Nanoimager, from laser source selection to exposure time. Basic single molecule data filtering can also be performed to get a sense of your data while still acquiring!

CODI

ANALYSIS, STORAGE, AND COLLABORATION

CODI is your analysis platform, your super-computer, your storage system and your collaboration suite all built into one, accessible from anywhere. Everyone using a Nanoimager gets access to CODI and the new resources, applications and tools released to CODI will come at no charge during the Beta phase of release.

Software that goes beyond analysis.



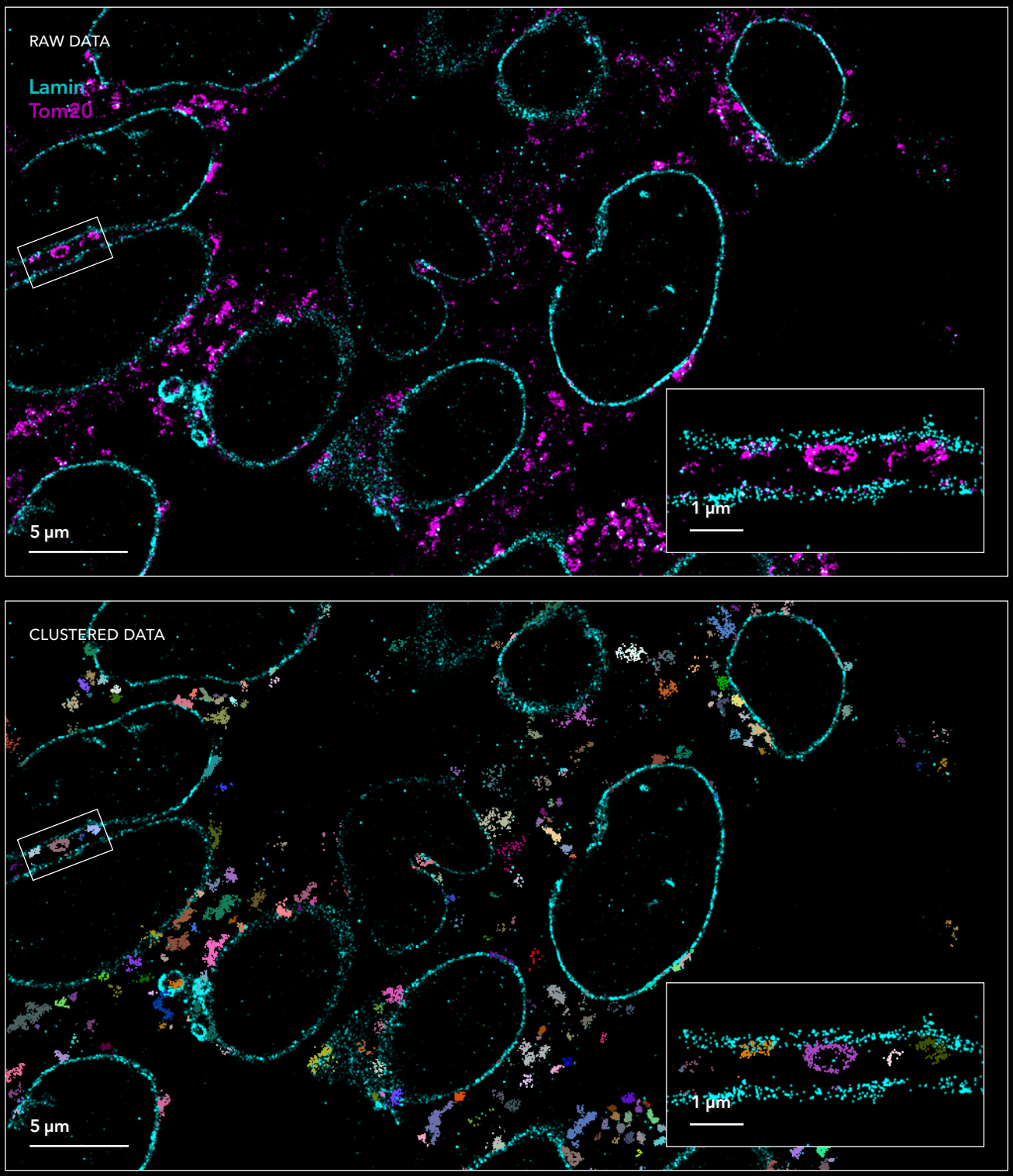
HCT116-derived EV sample captured on ONI's functionalized chips and labeled with WGA (yellow), anti-CD63-568 (cyan) and anti-CD81-647 (magenta). Scale bars range from 5 µm to 50 nm.

Navigate Your Data Seamlessly

ONI's Nanoimager and CODI platform enable imaging and analysis of samples across scales. The Nanoimager has a field-of-view of 50 µm x 80 µm. CODI enables you to zoom in and out as many times as you want and experience travel down to the nanoscale.

In the example to the left, thousands of EVs were imaged in a field of view, and inspected down to the single EV and biomarker level.

Characterize structures from all angles and scales.



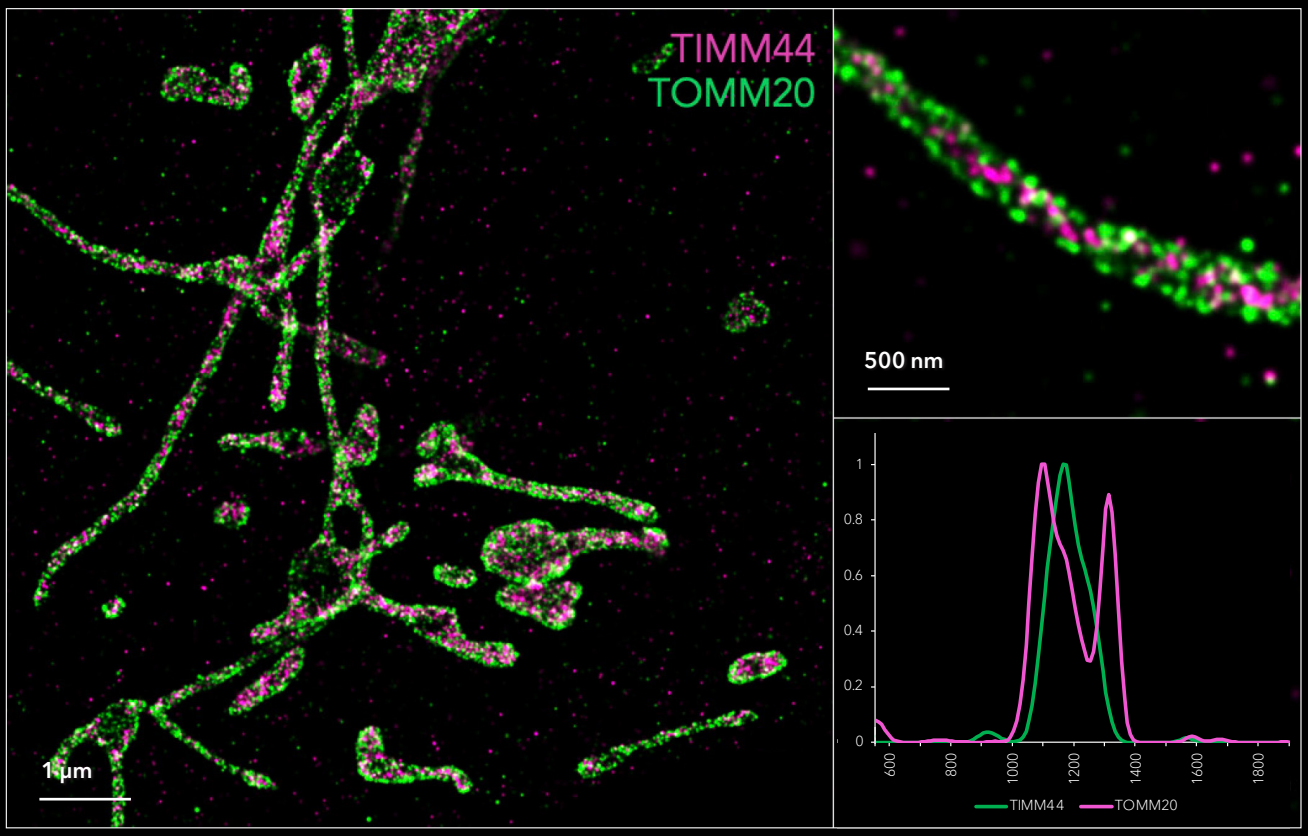
Colorectal cancer tissue sections were stained for Lamin (cyan) and Tom20 (magenta) and imaged with dSTORM. Super-resolution microscopy and downstream application of clustering algorithms provides an optimal solution to detect nanoscale changes in mitochondrial morphology.

Elevate Images With Quantitative Data

Our software tools enable you to obtain quantitative results from single-molecule localization microscopy experiments, allowing you to see, track and measure molecular structures and biomarkers of interest inside and outside particles, cells or tissue.

We have developed software to help answer a wide range of biological questions, with an increasing library of tools to acquire, analyze, quantify, and collaborate with super-resolution microscopy data.

Tools to visualize, track and quantify.



dSTORM image showing inner mitochondrial membrane TIMM44 (magenta) and outer membrane TOMM20 (green) proteins in U2OS cells, labeled with CF583R and AF647, respectively. Insets show two examples of individual mitochondria. Line profiles from each mitochondria were obtained to assess protein distances.

Applications

We can now image cells and particles at the highest resolution, understand molecular interactions and dynamics, and study the fundamentals of biology through single-molecule microscopy.

Scientists worldwide are using our technology in the following areas:

- Bacterial research
- Cell Phenotyping
- Extracellular Vesicles
- Immuno-Oncology
- Virology
- And many more!

Helping you focus on answering key questions.

Our team takes great pride and care in everything we do.
Our instruments and consumables are all manufactured in-house.

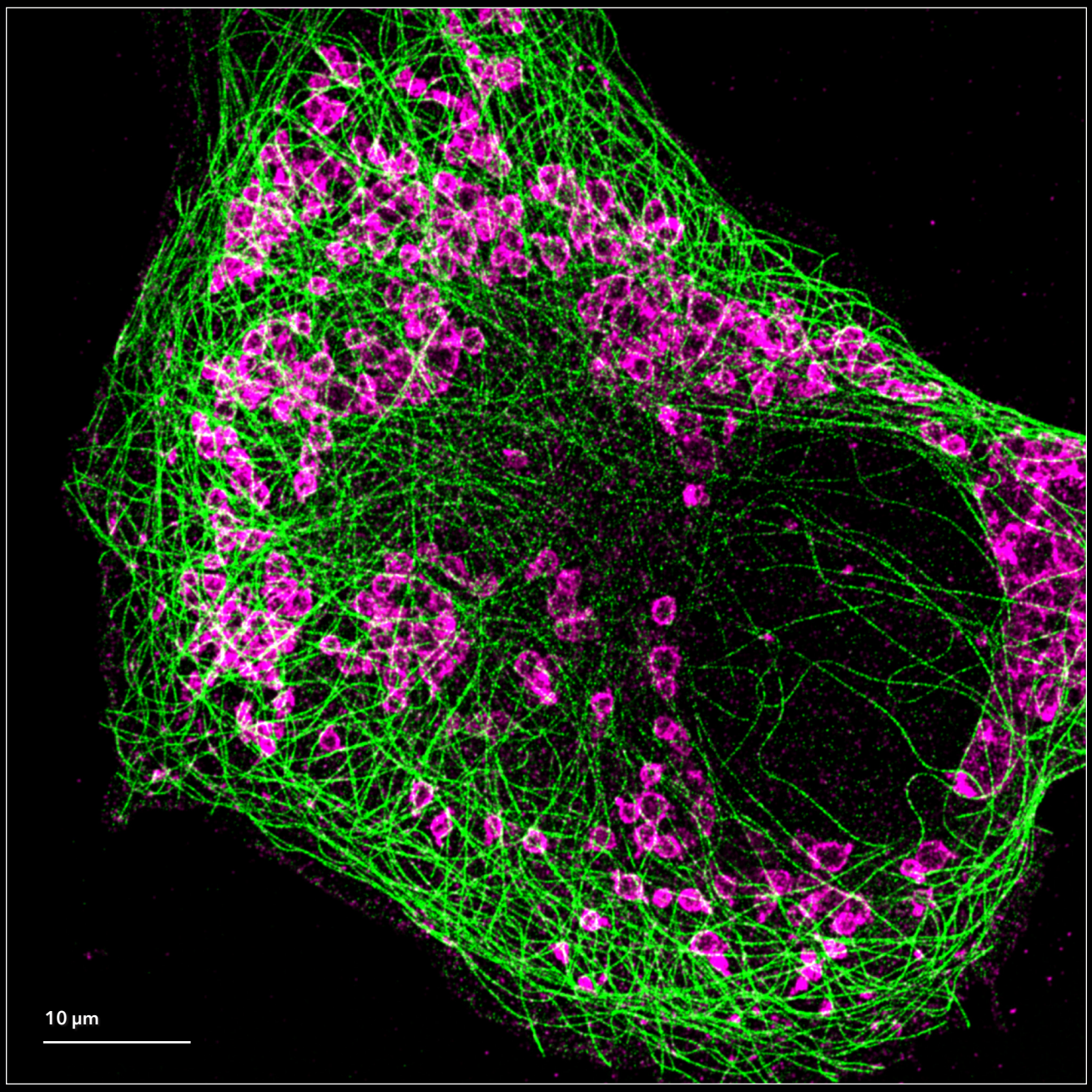
Our Commitment

At ONI, we are with you every step of your super-resolution journey. We love sharing knowledge and helping our user community reach new heights in their research, and take pride in our customer relationships and partnerships.

Check out ONI's virtual resource hub to stay up to date on our newest content. See how our training tools and products can help push the boundaries of your research.

- Sales Support
- Technical Support
- Service Assistance
- Virtual Resource Hub
- Growing Training Toolkit

Your super-resolution partner.



CD63 (magenta) and tubulin (green) labeled in U2OS cells with AF647 and CF583R, respectively, and imaged simultaneously with 2-color dSTORM using the Nanoimager.

Join Our Community Now

Super-resolution microscopy has historically been hard and mysterious for most biologists. We are on a mission to change this today, for biologists and for everyone else.

With ONI, you are not alone with our instruments. We invest time in training and customer support so that you can become an expert. We want to join you in your journey to improve science and make new discoveries.

If you want to learn more about our technology, get access to our products and discuss how we can help you conquer new challenges, get in touch with us:

Visit our website at www.oni.bio, and reach out via hi@oni.bio

You can also find us on LinkedIn @ONI and Twitter @oniHQ

Happy imaging!

Are you ready to explore?

Distributore per l'Italia:

Contattaci:
alfatest@alfatest.it

alfatest.it
alfatestbio.it
alfatestlab.com