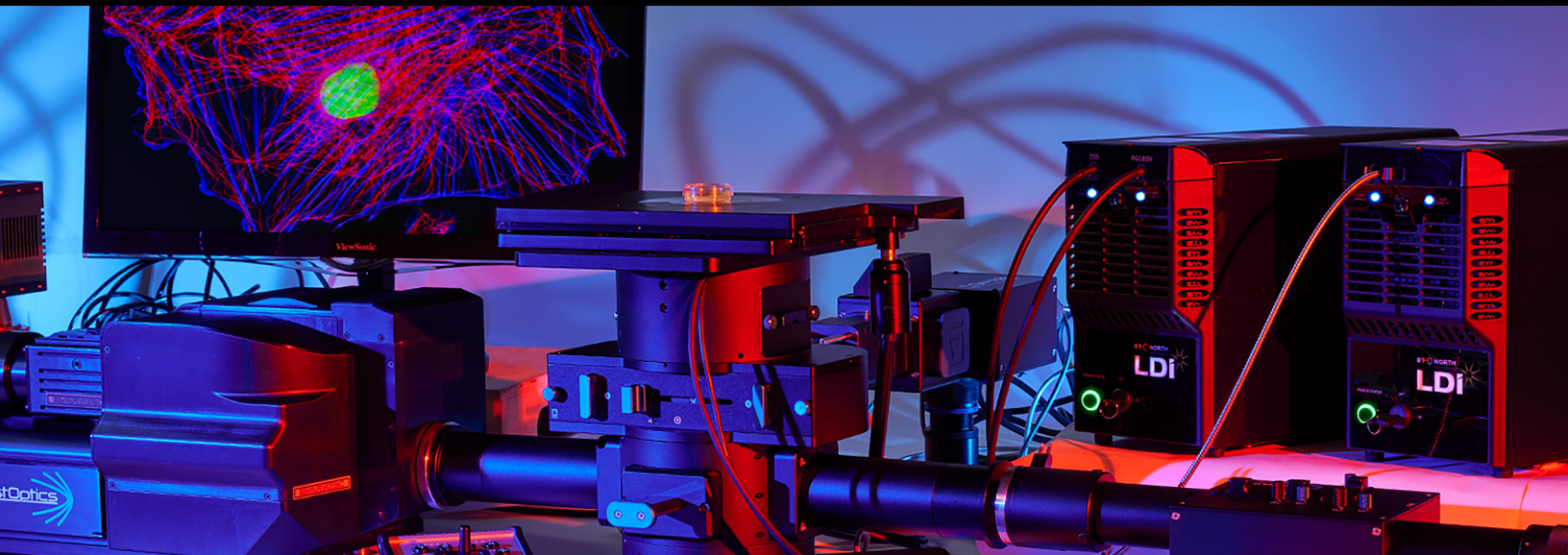


**89 NORTH**  
Illuminate Today. Transform Tomorrow

## OVERVIEW OF PRODUCTS & SERVICES

Our optical engineering expertise stems from our origins within the world's most advanced filter manufacturer. Our products and services are in the world's most advanced labs, pushing the edges of science. How can our award-winning teams empower you?



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- 02.** LDI Illumination Product Line p.6
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## OUR HONORS & AWARDS

We've been honored within our industry, within our state, and for our social community engagement.





# WE'RE SOLUTIONS ARCHITECTS FOR OPTICAL ENGINEERING CHALLENGES

We're award-winning illumination solutions innovators...

backed by the world's leading developer of scientific optical filters...

leveraging the expertise we've built from working with worldwide microscopy solutions providers...

to develop advanced OEM manufacturing solutions for the advanced sciences & beyond.



# SUPERIOR ILLUMINATION OUR LDI FAMILY OF PRODUCTS



## FOUND IN THE WORLD'S MOST ADVANCED LABORATORIES

Our light engine solutions support the world's most sophisticated academic research in microbiology.



University of California  
San Francisco



Stanford  
University



National Institute  
of Mental Health



RUTGERS

Yale

NC STATE  
UNIVERSITY



Cornell University

hhmi | janelia  
Research Campus



UNIVERSITY OF  
OXFORD

Mit

S Syracuse University



HARVARD  
UNIVERSITY



BROWN

Washington  
University in St. Louis

## MICROSCOPY LIGHT ENGINE PRODUCT LINE UP

The LDI is a multiline, solid-state laser illuminator offering up to 1000mW of output power via a multimode fiber at the price of a low power LED light engine. With feedback-controlled output stability and up to a 100:1 linear dynamic range, the LDI is the ideal light source for a wide range of applications including spinning disk confocal microscopy, structured illumination microscopy, FRAP, photoactivation / photoconversion, and PALM/STORM.



240+

## OVER 240 WORLDWIDE SCIENTIFIC CITATIONS

Our light engine products have had the honor of being cited in over 240 worldwide scientific papers. Our products support important research, including the efforts of Nobel Prize winning scientists.

# SAMPLE PRODUCTS FROM OUR LDI PRODUCT LINE UP



## LDI-4-488 SF LASER DIODE ILLUMINATOR

Our lead product designed for the needs of researchers requiring single 100um fiber output.

### KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ 4 laser lines: 405, 488, 640, 555
- ✓ No user alignment
- ✓ TTL and Analog control
- ✓ Single 100um fiber output

### LEARN MORE

Scan the QR code to visit our website



## LDI-4 LASER DIODE ILLUMINATOR

Our lead product in an economical form factor featuring 4 laser lines.

### KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ 4 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control

### LEARN MORE

Scan the QR code to visit our website



## LDI-5-488-577 LASER DIODE ILLUMINATOR

Our lead product features 5 laser lines with 488nm and 577nm laser technology.

### KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ 5 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control

### LEARN MORE

Scan the QR code to visit our website



## LDI-7 LASER DIODE ILLUMINATOR

Our lead product in a complete form factor featuring 7 laser lines.

### KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ Up to 7 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control

### LEARN MORE

Scan the QR code to visit our website



## LDI-PRIME LASER DIODE ILLUMINATOR

Our lead product focuses on researching requiring the use of single fiber output.

### KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ 4 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control
- ✓ Single fiber output

### LEARN MORE

Scan the QR code to visit our website



## LDI-NIR LASER DIODE ILLUMINATOR

Our economical solution focused on research requiring Near Infrared functionality.

### KEY FEATURES

- ✓ High output power
- ✓ Feedback controlled optical stability
- ✓ Up to 100:1 linear dynamic range
- ✓ Up to 7 laser lines across the spectrum
- ✓ No user alignment
- ✓ TTL and Analog control

### LEARN MORE

Scan the QR code to visit our website



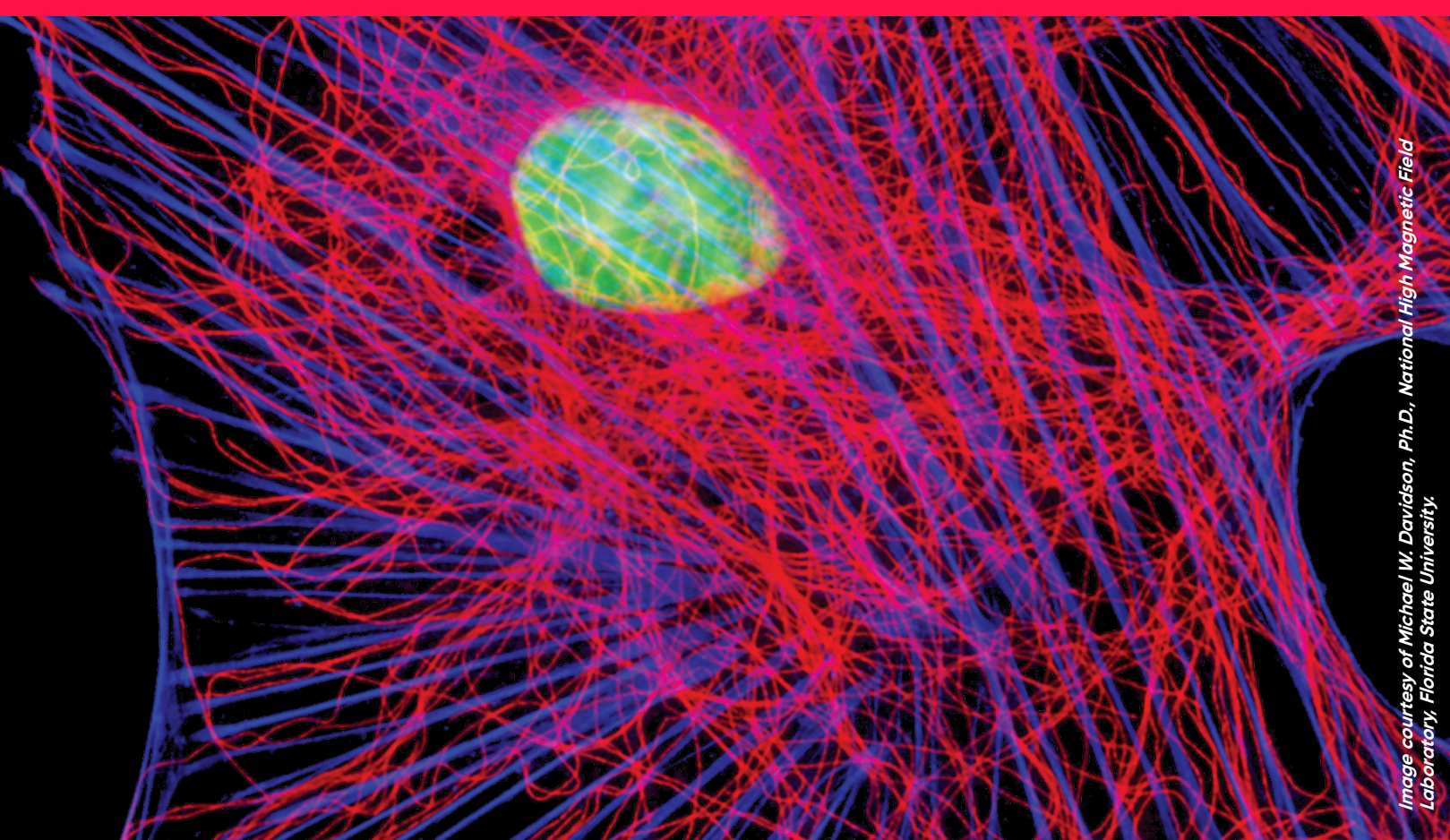


Image courtesy of Michael W. Davidson, Ph.D., National High Magnetic Field Laboratory, Florida State University.

# HIGH-PERFORMANCE LASER DIODE ILLUMINATION

## A SPECTRUM OF CHOICES

The LDI is a multiline, solid-state laser illuminator offering up to 1000mW of output power per laser line via a multimode fiber at the price of a low power LED light engine. With feedback controlled output stability and up to a 100:1 linear dynamic range, the LDI is the ideal light source for quantitative imaging, ratiometric imaging, and more repeatable optogenetics experiments. There is no user alignment, and it is easy to use and maintain.

## APPLICATIONS

- Spinning Disk Confocal Microscopy
- Super Resolution SIM Imaging
- PALM/STORM
- Optogenetics with DLPs or Multiport Illuminator
- Photoactivation/Photoconversion/FRAP
- FRAP with SLM or Multiport Illuminator
- Spatial Biology



## LDI FAMILY PRODUCT LINE OVERVIEW

We now offer a full range of LDI products, including laser lines 488, 577, and into the NIR. Other laser lines are available upon request. Units shown in the interior of the table below are milliwatts (mW).

Product Line Up	405nm	445nm	470nm	488nm	520nm	528nm	555nm	577nm	640nm	730nm
LDI-4	300mW		1000mW				1000mW		400mW	
LDI-5-488-577	450mW			1000mW				700mW	900mW	850mW
LDI-7	300mW	1000mW	1000mW		500mW	500mW	1000mW		400mW	
LDI-NIR	450mW	1000mW	1000mW		500mW		1000mW		900mW	850mW
LDI-PRIME+	150mW			800mW			600mW		300mW	
LDI-4-488-SF*	150mW			200mW			200mW		150mW	

\*SF is small fiber version with a 100µm core fiber optic output  
 \*PRIME+ unit is a single 400µm core fiber optic output

22+ models available today  
 Option to combine multiple LDIs into single output

## OVER 20 CUSTOMIZABLE CONFIGURATIONS AVAILABLE

Our LDI line up can be custom configured to your needs. Contact us with your specific requirements.



## CONTACT US

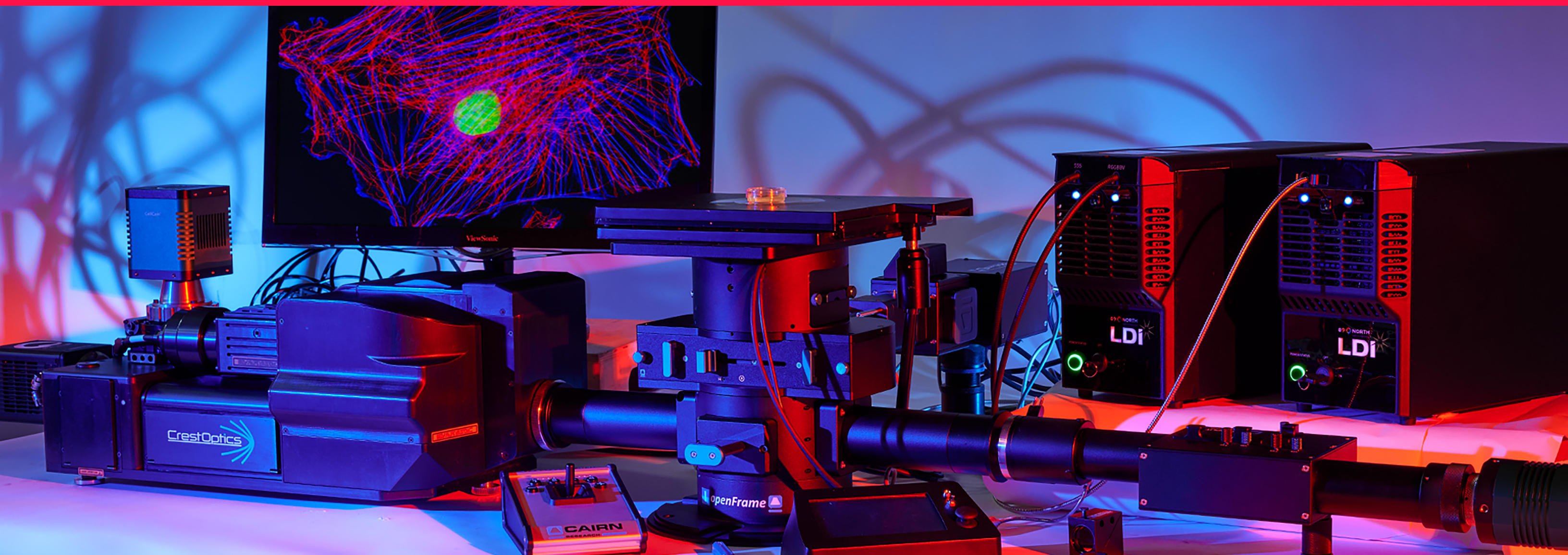
Note that in addition to what's shown above, we also work with institutions to make custom solutions. Have questions on what's right for you?

Email: [slin@89north.com](mailto:slin@89north.com)

Phone: +1.802.881.0302



# MAKING YOUR SCIENCE SING SYSTEM INTEGRATION SERVICES

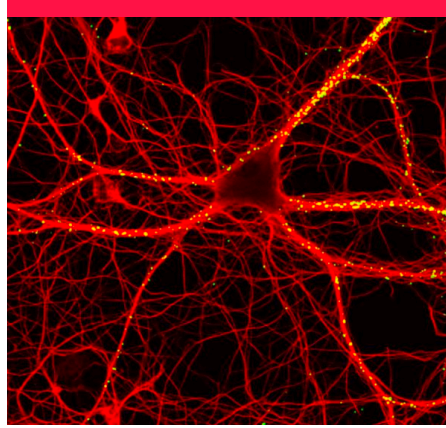


## ORCHESTRATING THE PERFORMANCE OF YOUR MICROSCOPY SYSTEM

A modern imaging system is a symphony of moving parts and technologies. Whether it's an optimized turnkey system or a bespoke microscope pushing science to the optical limit, system integration services from 89 North can help align the hardware, software, and processes of your microscopy system for seamless and efficient operation.



APPLICATIONS & TECHNIQUES FOR WHICH WE PROVIDE  
**SYSTEM INTEGRATION SERVICES**



**CONFOCAL**

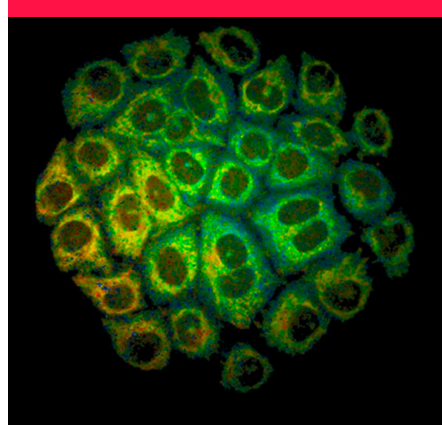
High speed, high sensitivity, and high value imaging systems.

**WHAT WE PROVIDE**

- ✓ The highest speed spinning disks available
- ✓ Multiple pinhole sizes and patterns
- ✓ Laser and filter customization
- ✓ Large field-of-view (25mm)

**LEARN MORE**

Scan the QR code to visit our website



**PHOTOMANIPULATION**

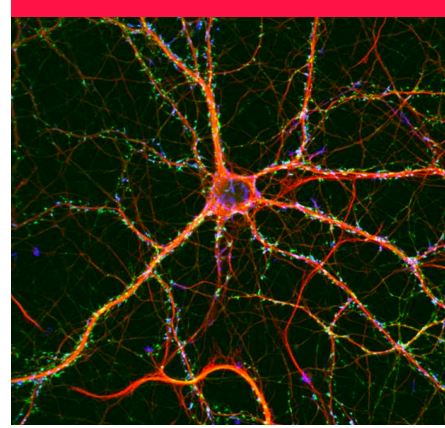
Targeting illumination for FRAP, photoconversion, optogenetics, ablation, DNA damage, targeted thermal control, and more.

**WHAT WE PROVIDE**

- ✓ Visible, UV, and IR light wavelengths
- ✓ CW or pulsed lasers
- ✓ High speed control
- ✓ Experiment synchronization with virtually any imaging system

**LEARN MORE**

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**SIMULTANEOUS IMAGING**

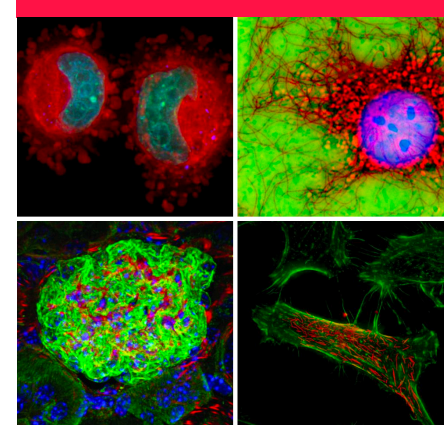
Synchronous imaging of multiple wavelengths, polarization, or z-depth channels.

**WHAT WE PROVIDE**

- ✓ Single camera splitters
- ✓ Multi-camera systems
- ✓ Large field-of-view (over 25mm)
- ✓ Filter assistance

**LEARN MORE**

Scan the QR code to visit our website



**CELLULAR BIOLOGY**

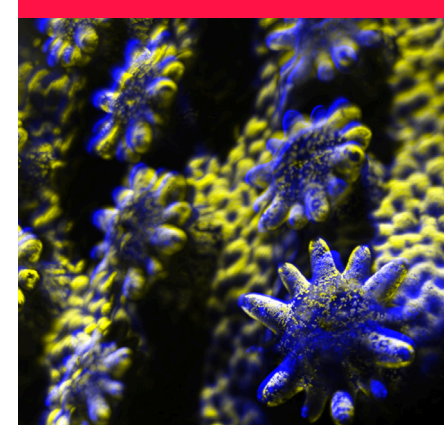
Solutions to study the fundamental units of life, cells, and their intricate processes that underlie all living organisms.

**WHAT WE PROVIDE**

- ✓ Custom multi-dimensional systems
- ✓ Low phototoxicity solutions
- ✓ High speed volumetric imaging
- ✓ Visualization in deep and difficult samples

**LEARN MORE**

Scan the QR code to visit our website



**NEUROSCIENCE**

Imaging solutions optimized for the complex structure and signaling of the nervous system and cells.

**WHAT WE PROVIDE**

- ✓ High speed, high resolution microscopy
- ✓ Calcium indication imaging
- ✓ Low light level solutions
- ✓ Multidimensional image reconstruction

**LEARN MORE**

Scan the QR code to visit our website



**SINGLE MOLECULE FISH (smFISH)**

High power, stability, and simultaneous excitation provides the fastest data acquisition across large samples.

**WHAT WE PROVIDE**

- ✓ Ability to image multiple wavelengths simultaneously
- ✓ High Power and High Stability laser light source with up to 7 different laser lines
- ✓ High Speed image acquisition in XY & Z across large samples and tissues
- ✓ Combining high speed and high resolution to maximize productivity

**LEARN MORE**

Scan the QR code to visit our website







## OVERVIEW OF SERVICES

These are just some of the many services that 89 North can offer:

- Installation and training
- On-site technical support
- Remote software setup
- Optical alignment
- Laser safety assistance
- Custom optical filter design
- System automation

## CLIENTS SERVED

Our customer base includes some of the most respected institutions in imaging and research.



# BRINGING IT ALL TOGETHER FULL SYSTEM INTEGRATION

## ORCHESTRATING THE ENTIRE SYSTEM

89 North can provide products, software, and services to build cutting edge microscopy systems that are cost efficient and easy to use. With robust system integration capabilities, these are just some of the techniques that 89 North can help you unlock with your existing microscope, or a complete new package:

- Spinning Disk Confocal Microscopy
- Super Resolution SIM Imaging
- Stochastic Super-Resolution (PALM/STORM)
- Optogenetics
- Photoactivation/Photoconversion/FRAP
- Single Molecule Imaging
- Spatial Biology

## CONTACT US

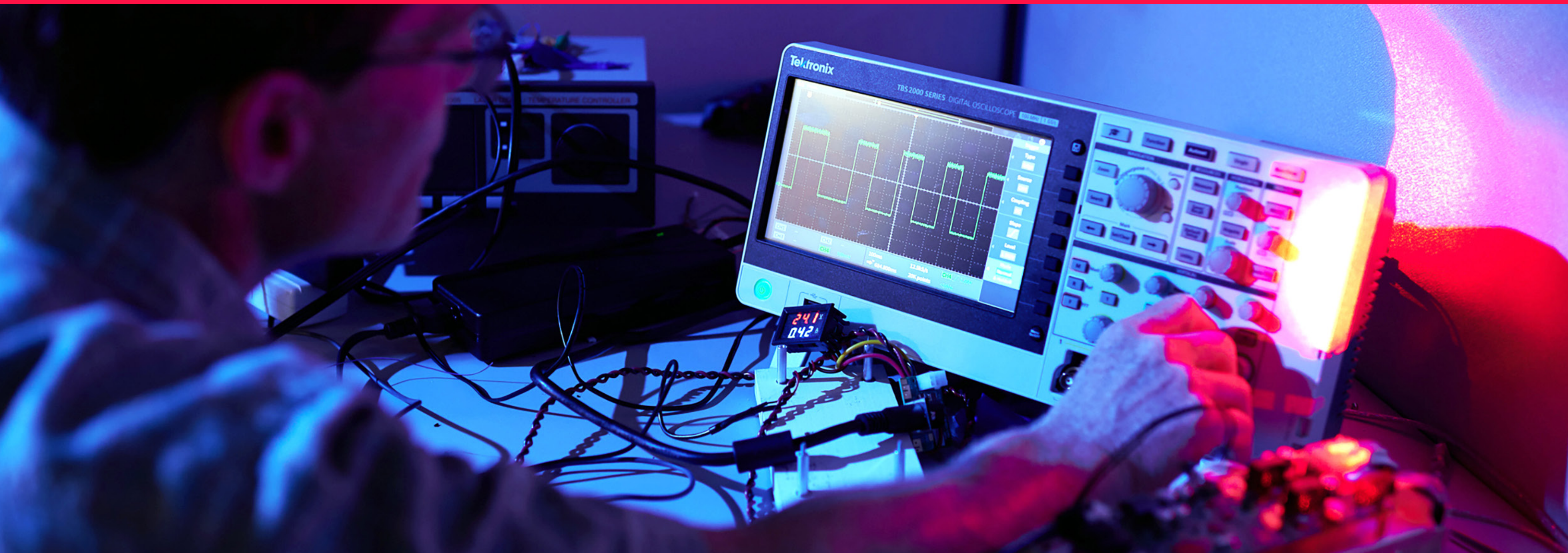
Note that in addition to what's shown above, we also work with institutions to make custom solutions. Have questions on what's right for you?

Email: [canderson@89north.com](mailto:canderson@89north.com)

Phone: **+1.802.881.0302**



# OPTICAL EXPERTISE OUR OEM SERVICES



## OPTICAL ENGINEERING OEM EXPERTISE

Scientific tools and techniques that used to reside solely in the nation's most prestigious laboratories are now finding their way into commercial applications. We, along with our sister company Chroma Technology, are pioneering new use cases for deploying the power of light in innovative ways across a variety of industries.

- Bioanalytical Device Manufacturing
- Industrial Inspection
- Photonics & Imaging Applications
- Medical Device Manufacturing





## EMBEDDED OPTICS 89 NORTH'S OEM SERVICES

### CORE EXPERTISE: CUSTOM ILLUMINATION DESIGN

This is where we shine. Our expertise in laser illumination coupled with our award-winning team has culminated in the release of an OTF laser launch that cannot be beat for value. Your application depends on precisely the right light delivery. We have the expertise to help you find the right illumination solution to deliver the results you need.

### CUSTOM ENGINEERING SOLUTIONS

Mastering the intricate art of light manipulation and management is a formidable challenge. At 89 North, we embrace this complexity, constantly seeking ingenious solutions while maintaining a delicate balance between cost, schedule, and risk. Our commitment to simplicity guides our approach to innovation, ensuring that our solutions not only meet but exceed expectations. We're dedicated to empowering scientists and researchers worldwide to push the boundaries of knowledge and discovery.

### COMMERCIAL APPLICATIONS

Our core mission is to bridge the gap between groundbreaking life science research and tangible, real-world applications. We leverage our expertise to transform discoveries into practical solutions that advance physical science and life science knowledge. Through innovation and collaboration, we empower the life sciences community to drive progress in medicine, biotechnology, and beyond.

- **Bioanalytical Device Manufacturing**  
89 North understands there is more to an optics system than just shining a light. We optimize every aspect of the design with the objectives of simplicity, cost-effectiveness, efficiency, and elegance.
- **Industrial Inspection**  
89 North is as comfortable building a multi-wavelength laser controller as we are designing the optics for flat-field illumination: We welcome the challenge.
- **Photonics & Imaging**  
89 North optimizes the excitation and emission pathways, reduces the noise, and maximizes the signal - getting every photon that counts to the detector.
- **Technical Collaboration Process**  
Elegance in simplicity. We understand complexity, but seek out the best, simplest, most cost-effective solution to your industrial inspection needs.

### OPTICAL SCIENCES ARE TRANSCENDING THE LABORATORY

Scientific tools and techniques that used to reside solely in the nation's most prestigious laboratories are now finding their way into commercial applications. We, along with our sister company Chroma Technology, are pioneering new use cases for deploying the power of light in innovative ways across a variety of industries.

### CONTACT US

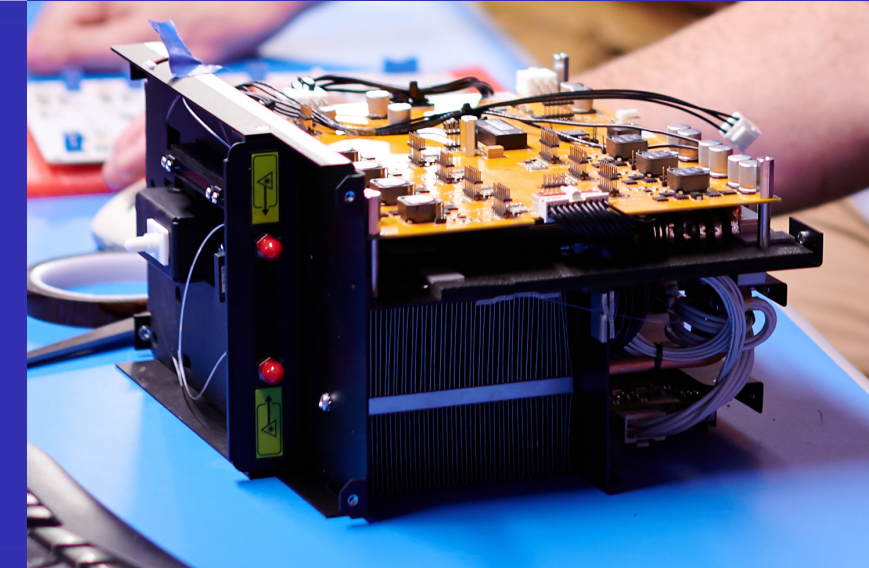
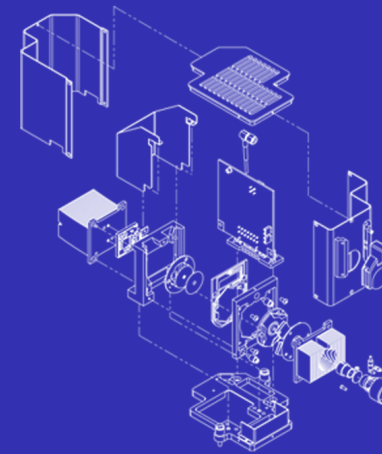
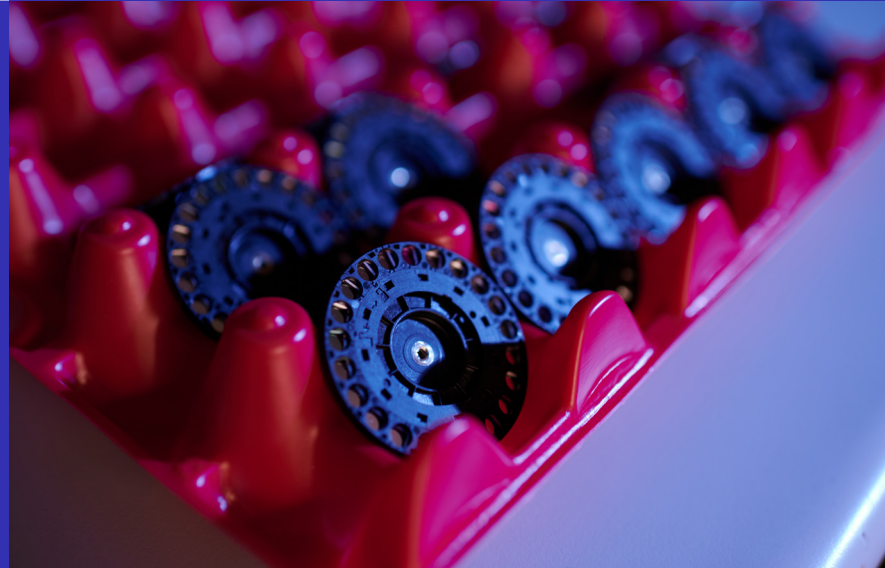
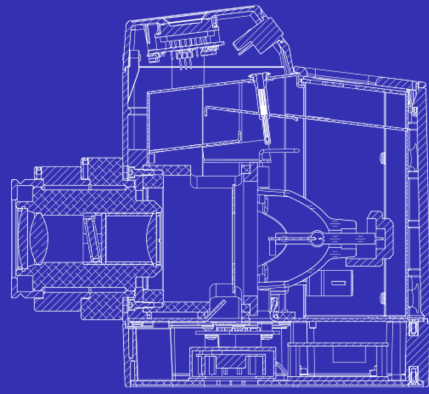
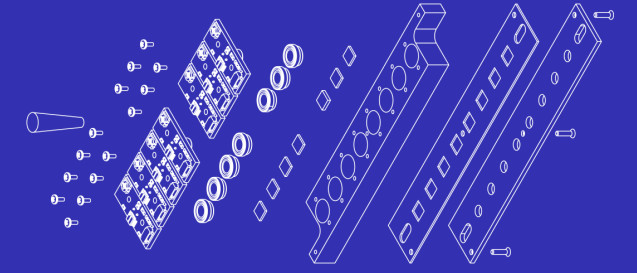
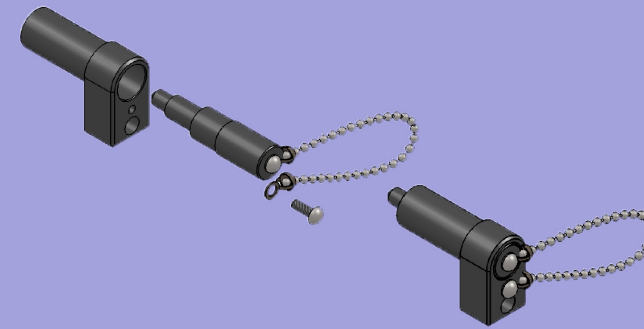
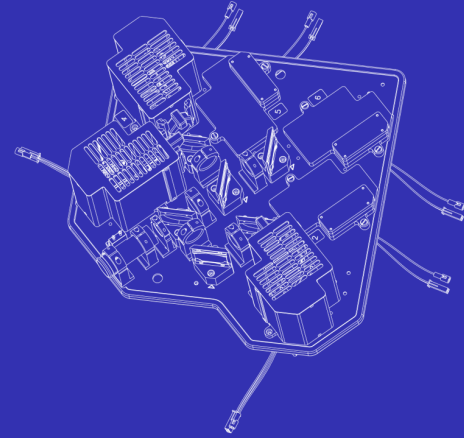
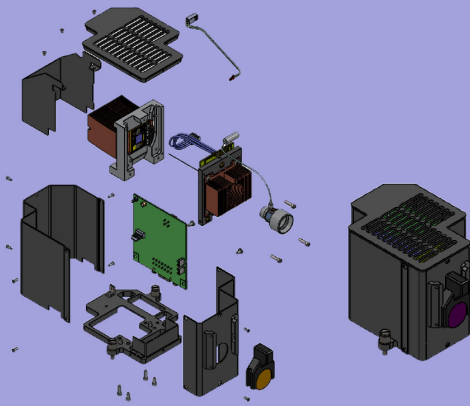
Note that in addition to what's shown above, we also work with institutions to make custom solutions. Have questions on what's right for you?

Email: [btrecroce@89north.com](mailto:btrecroce@89north.com)

Phone: +1.802.881.0302



# 89 NORTH'S OEM MANUFACTURING EXPERIENCE



## OUR EXPERIENCE

Optimization and management of light is inherently challenging. 89 North seeks simple solutions to complex challenges wherever possible, while balancing cost, schedule, and risk.

## EXAMPLES INCLUDE

- LED Modules
- LED Light Engines
- Light Engine for Biosciences
- Filters for Industrial Inspection
- Optical Path Designs
- Feedback Assemblies

# 89 NORTH<sup>®</sup>

Illuminate Today: Transform Tomorrow™

## Headquarters

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Email: [info@89North.com](mailto:info@89North.com)  
[www.89North.com](http://www.89North.com)

## Sales & Support - Europe

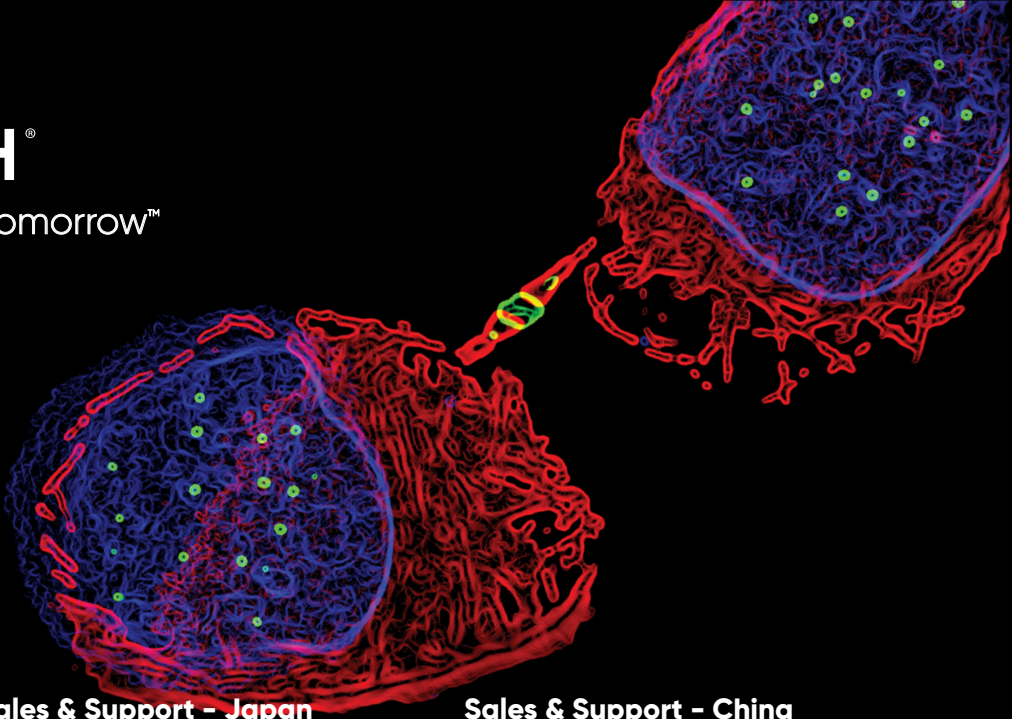
89 North / Chroma Technology GmbH  
Maximilianstrasse 33  
D-82140 Olching Germany  
Phone: +49 8142 4219701  
Fax: +49 8142 2845349  
[europe@chroma.com](mailto:europe@chroma.com)

## Sales & Support - Japan

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8F Yokohama Onoecho Building  
4-57 Onoecho Naka-ku  
Yokohama 231-0015 Japan  
Phone: +81 (0) 45 285 1583  
Fax: +81 (0) 45 285 1501  
[japan@chroma.com](mailto:japan@chroma.com)  
[www.jp.chroma.com](http://www.jp.chroma.com)

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Room 611, Building 23  
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[www.cn.chroma.com](http://www.cn.chroma.com)



## 89 NORTH AT YOUR SERVICE

Our experienced team is ready to serve you, whatever your optical engineering needs may be. Won't you contact us today?

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[info@89north.com](mailto:info@89north.com)

