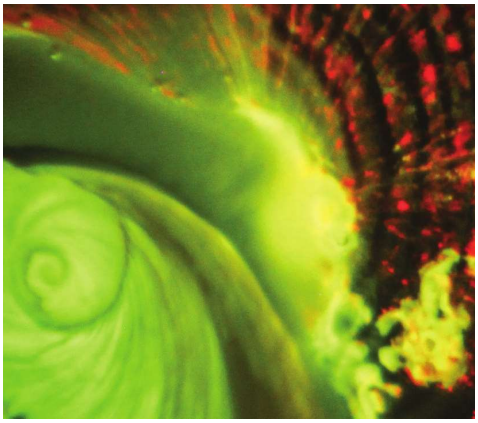
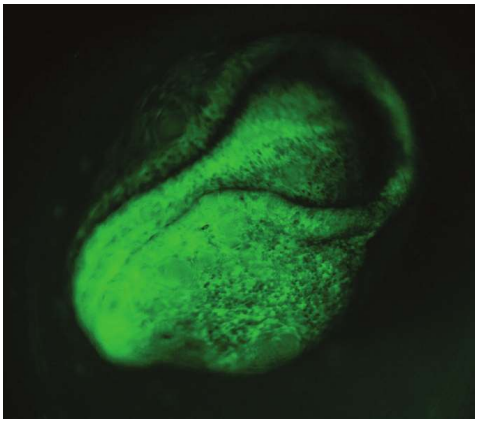


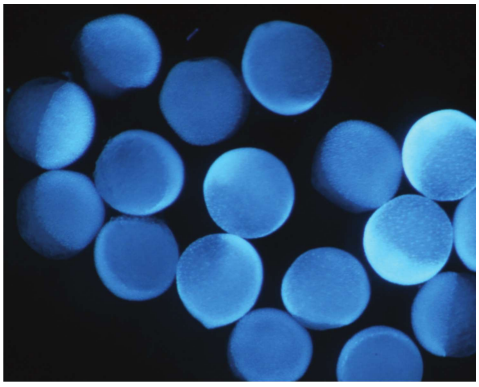
Microscopy + Fluorescence

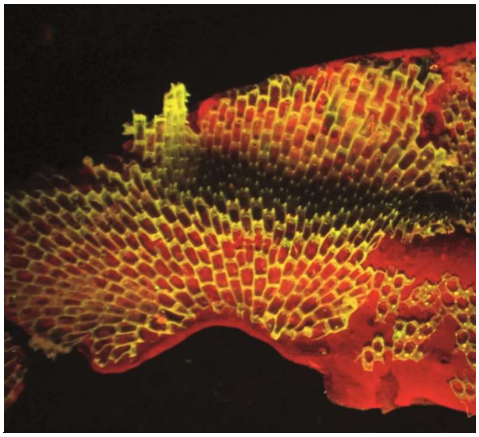
featuring...

NIGHTSEA

Fluorescence Viewing Systems







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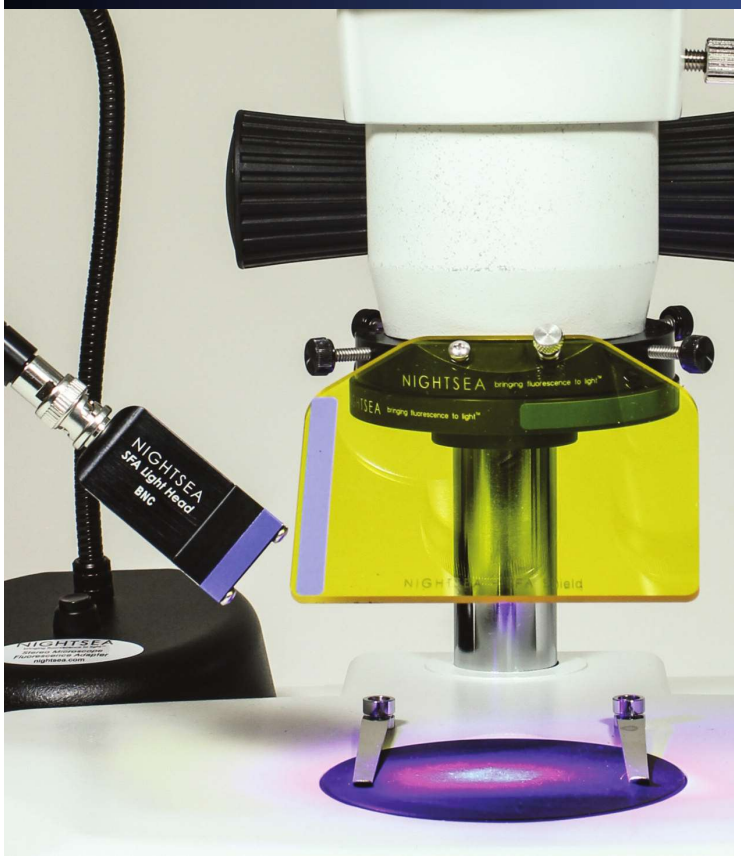

NIGHTSEA™ Stereo Microscope Fluorescence Adapter

Adapt your existing lab stereo microscopes for fluorescence

The NIGHTSEA™ Stereo Microscope Fluorescence Adapter adapts just about any stereo microscope (dissecting microscope) for fluorescence with no modification to the microscope itself. The modular design lets you easily switch between several different excitation/emission combinations to work with a variety of fluorescent proteins and other fluorophores. There are now five different excitation/emission combinations available, plus white light.

Applications

This simple system is excellent for:

- **Quick screening of your fluorescent genotypes - *Drosophila*, zebrafish, *C. elegans*,...**
- **Genotype sorting**
- **Fluorescence-aided dissection, injection, or micromanipulation**
- **Freeing up your research-grade fluorescence microscopes for more demanding work**
- **New faculty start-up budgets**
- **Bringing fluorescence into the teaching laboratory**

The Stereo Microscope Fluorescence Adapter system consists of:

- Flexible gooseneck lamp base with power supply
- Light head
- Ring adapter for microscope
- Barrier filter
- Filter shield

The light head, barrier filter, and filter shield are interchangeable so that you can easily switch between excitation/emission light+filter combinations.

The microscope mounting adapter fits up to 67mm to work with the majority of stereo microscopes.

Once you are set up for one excitation/emission wavelength combination, additional combinations can be added by purchasing a kit that consists of a light head, barrier filter, and viewing shield. These three elements can be removed and replaced in seconds, and color coding ensures that you are using the right combination. The barrier filter clicks on to the ring adapter magnetically, so it is easy to remove it to switch back to white light viewing.

Fluorescence isn't just for research microscopes anymore...

Now sort on your laboratory-level stereos
Use to facilitate micromanipulation and dissection
Expand from your research lab to your classroom

Modular...

Installs in seconds - just clicks into place
Interchangeable excitation/emission combinations
Move from microscope to microscope
No modification to your microscope needed

Economical — More Glow for the Dough...

Stretch your lab budget
Inexpensive enough for classroom use

Grows as your lab grows...

Buy just what you need now (up to 5 different wavelength sets)
Add more as your needs expand

Stereo microscope configured for green fluorescence, viewing *Xenopus* through shield filter for sorting.

Electron Microscopy Sciences In PA: (215) 412-8400 • Toll-Free (800) 523-5874
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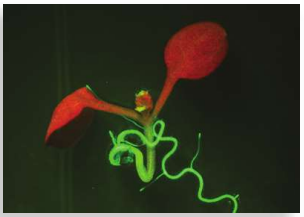
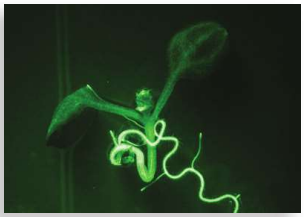
NIGHTSEA™ Stereo Microscope Fluorescence Adapter (continued)

Green-Only Barrier Filter

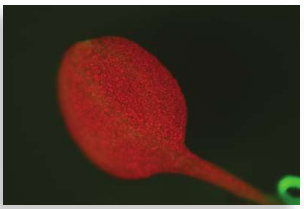
We are now offering an additional barrier filter option for the Stereo Microscope Fluorescence Adapter. The new filter isolates the green part of the spectrum and is for use with the Royal Blue excitation source. While our other barrier filters are long-pass filters this new filter is a bandpass, transmitting from approximately 500 to 560nm. The long-pass filter has served well for most users who need to visualize green-fluorescent protein (GFP), and if you are exploring fluorescence in nature it is preferable. The primary motivation for adding the green-only filter to the line-up was for the benefit of researchers using GFP in plants such as *Arabidopsis thaliana*, a common research model. Plants contain chlorophyll, which has a distinctive red fluorescence that can sometimes mask the GFP emission, making it harder to see and photograph.



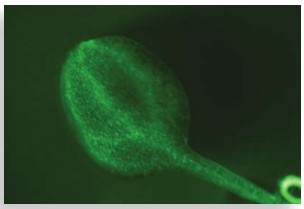
Arabidopsis fluorescence imaged with long-pass filter



Arabidopsis fluorescence imaged with bandpass filter



Arabidopsis fluorescence imaged with long-pass filter



Arabidopsis fluorescence imaged with bandpass filter

We tested this new barrier filter with *Arabidopsis* supplied by Dr. Chip Celenza (Department of Biology, Boston University). These plants express GFP in the roots and vasculature. The images below show examples of plants photographed with the long-pass filter (left) and green-only filter (right). There is no chlorophyll in the roots so the GFP is evident there in both images, but the weaker expression in the leaves is much more apparent in the images on the right.

See how it works...
Learn how to do it...

We've added video content to our website to help you get to know our latest products even better!

Stop by and see what it's all about.

Specifications

Filter Set	Excitation	Emission	Fluorophores
RB – Royal Blue	440-460nm	500nm LP	GFP, eGFP, fluorescein...
RB-GO	440-460nm	500-560nm BP	GFP, eGFP, fluorescein...
CY – Cyan	490-515nm	550nm LP	YFP, Venus, Lucifer Yellow...
GR – Green	510-540nm	600nm LP	DsRed, dTomato...
VI – Violet	400-415nm	460nm LP	CFP, ...
UV – Ultra Violet	360-380nm	415nm LP	DAPI, ...

Microscope Mounting Adapter — fits up to 67mm standard.

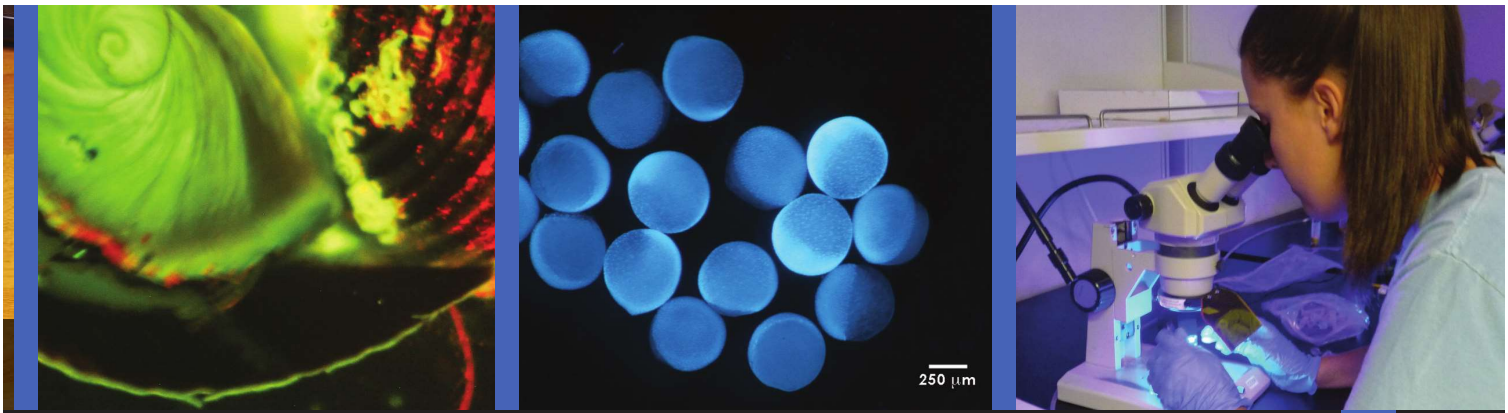
Ordering Information

Adapter system:

Full system with one illumination color consisting of:

- Lamp Base with Power Supply
- Light Head-Royal Blue, Cyan, Green, or Violet
- Microscopy Mounting adapter
- Barrier Filter
- Viewing Shield

Cat No.	Description	Qty.
SFA-RB	Full System with Royal Blue	each
SFA-RB-GO	Full System with Royal Blue Light Head, Green-Only Barrier Filter	each
SFA-CY	Full System with Cyan	each
SFA-GR	Full System with Green	each
SFA-VI	Full System with Violet	each
SFA-UV	Full System with Ultra Violet	each



Accessories for the NIGHTSEA™ Stereo Microscope Fluorescence Adapter

Battery and Charger

NEW

Compact battery pack that can run the Stereo Microscope Fluorescence Adapter (SFA) all day long. The battery enables truly portable operation so that you can set up demos anywhere or explore fluorescence in the field, without having to worry about plugging into the power grid.

Just plug the battery into the SFA base instead of the usual power connector. The battery has been tested at over 8 hours of continuous operation, and it will last even longer if you turn the system off when you don't need it. Plug it into the included charger overnight to recharge.

Specifications

Battery Type	Nickel Metal Hydride (NiMH)
Capacity	12V, 3.8 Ah
Dimensions	11.4 x 8.9 x 5.6 cm (4.5 x 3.5x 2.19 in)
Weight	0.7 kg (1 lb 9 oz)
Operation Duration	8 hours continuous
Charge Time	Overnight
Charger	50/60 Hz, 110/220V (US type plug)

Cat No.	Description	
SFA-BATT	Battery and Charger	each

Eclipse MicroTent™

The Eclipse MicroTent™ is a unique product for fluorescence microscopy that provides local darkness around conventional laboratory stereo microscopes. Fluorescence microscopes are kept in dark rooms for good reason — fluorescence can be weak and in many cases it can be difficult to see well if there is any ambient light. Microscopes may be on lab benches in shared spaces, near windows, or in other difficult-to-darken locations such as in the field. Turning off overhead lights can help but inconveniences others.

The Eclipse MicroTent™ creates local darkness around a microscope while still providing easy access to the sample stage and the focus and zoom controls. It is designed for stereo microscopes but could potentially be used with many varieties of compound microscopes.

Features

- Opening for the microscope oculars with elastic sleeve to minimize light entry
- Large front flap provides easy access to the sample stage and can fasten open
- Arm slots on sides to provide access to focus and zoom controls
- User-customizable feedthrough patches to provide additional penetrations for camera port, power cords, CO_2 lines, or other features as you need
- Tru-Block™ Eye Shields included with every Eclipse MicroTent™
- Folds flat for storage

Dimensions: 46 x 30 x 50 cm (18 x 12 x 20 in.)

Cat No.	Description	Qty.
SFA-TENT	Eclipse MicroTent™	each

Eye Shields

Light entering your eyes from the side can interfere with what you want to see in microscopy in general, and fluorescence microscopy in particular. Eye cups are available, but the standard ones don't extend far from the microscope and don't do a good job as ambient light increases. Our soft, molded rubber high-sided microscope eye shields are the answer. The tall wings extend up far enough to truly shield your eyes from any level of ambient light and eliminate distractions so that you can see your subject better. Two pairs (one Standard, one Compact) will be included with every Eclipse MicroTent™, and you can also purchase them separately.

Standard

Compact

The Tru-Block Eye Shields are available in two sizes:

Standard: fits 36 - 45mm (1.45 - 1.75")

Compact: fits 28 - 37mm (1.10 - 1.46")

Cat No.	Description	Qty.
SFA-EYE-S	Tru-Block Eye Shields - Standard	set
SFA-EYE-C	Tru-Block Eye Shields - Compact	set

SFA + Eclipse MicroTent + Battery = Fluorescence Everywhere

Combine the battery with the Eclipse MicroTent and you not only don't need a place to plug in, you don't even need to be in the dark! We have used this combination to do fluorescence microscopy at a beach in the middle of the day, in the desert at high noon, and more. Fluorescence can be found everywhere, and now you have the tools to go there.

Electron Microscopy Sciences In PA: (215) 412-8400 • Toll-Free (800) 523-5874
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Accessories for the NIGHTSEA™ Stereo Microscope Fluorescence Adapter

Add-On Light and Filter Sets:

Each add-on excitation/emission set consists of:

- Light Head
- Barrier Filter
- Viewing Shield
- Padded Storage Box

Cat No.	Description	Qty.
SFA-LFS-RB	Add-On Light and Filter Set, Royal Blue	each
SFA-LFS-CY	Add-On Light and Filter Set, Cyan	each
SFA-LFS-GR	Add-On Light and Filter Set, Green	each
SFA-LFS-GO	Add-On Light and Filter Set, Green Only	each
SFA-LFS-VI	Add-On Light and Filter Set, Violet	each
SFA-LFS-UV	Add-On Light and Filter Set, Ultra Violet	each

Modular White Light Head

A white light head is also available as an illumination option for the Stereo Microscope Fluorescence Adapter. Now if you are using the NIGHTSEA system for fluorescence you do not need a separate light source for your white-light work - just exchange the fluorescence excitation light head module for the white-light module in a matter of seconds. Extremely convenient for general illumination and as a focusing aid for fluorescence imaging.

Cat No.	Description	Qty.
SFA-LH-WH	Modular White Light Head	each

NIGHTSEA™ a la carte

Need an extra, not a set? Order from here:

Cat No.	Description	Qty.
Light Heads:		
SFA-LH-RB	Nightsea Light Head-Royal Blue	each
SFA-LH-CY	Nightsea Light Head-Cyan	each
SFA-LH-GR	Nightsea Light Head-Green	each
SFA-LH-VI	Nightsea Light Head-Violet	each
SFA-LH-UV	Nightsea Light Head-Ultra Violet	each
Barrier Filters:		
SFA-BF-RB	Nightsea Barrier Filter-Royal Blue	each
SFA-BF-CY	Nightsea Barrier Filter-Cyan	each
SFA-BF-GR	Nightsea Barrier Filter-Green	each
SFA-BF-GO	Nightsea Barrier Filter-Green Only	each
SFA-BF-VI	Nightsea Barrier Filter-Violet	each
SFA-BF-UV	Nightsea Barrier Filter-Ultra Violet	each
Shields:		
SFA-SH-RB	Nightsea Shield-Royal Blue	each
SFA-SH-CY	Nightsea Shield-Cyan	each
SFA-SH-GR	Nightsea Shield-Green	each
SFA-SH-GO	Nightsea Shield-Green Only	each
SFA-SH-VI	Nightsea Shield-Violet	each
SFA-SH-UV	Nightsea Shield-Ultra Violet	each
SFA-AD	Nightsea Adapter	each
SFA-BASE	Nightsea Base	each

NEW

Light Head Hangers and Cables

The NIGHTSEA™ light head hangers and cables conveniently hold the light head in lieu of the gooseneck lamp. The hangers mount to the end of any of the thumbscrews on the SFA adapter ring. They are available with two different pivot arm lengths for use with long and short working distance microscopes.

The cables are available in single and dual styles. With the single cable and one light head hanger you can remove the light head from the gooseneck and mount it on the SFA adapter ring. With the dual cable you can power TWO light heads from one base. Just add a second light head and two light head hangers and you have double the excitation intensity.

The light head hangers and cables are available individually or in combination kits.

*for **long** working distance* *for **short** working distance*

Cat No.	Description	Qty.
SFA-LHH-L	Light Head Hanger, long working distance	each
SFA-LHH-S	Light Head Hanger, short working distance	each
SFA-LHC	Single Light Head Cable, V1	each
SFA-LHC-BNC	Single Light Head Cable, BNC	each
SFA-DLHC	Dual Light Head Cable, V1	each
SFA-DLHC-BNC	Dual Light Head Cable, BNC	each
SFA-HK-L	Single hanger kit, long working distance, V1: SFA-LHC + SFA-LHH-L	kit
SFA-HK-S	Single hanger kit, short working distance, V1: SFA-LHC + SFA-LHH-S	kit
SFA-HK-L-BNC	Single hanger kit, long working distance, BNC: SFA-LHC-BNC + SFA-LHH-L	kit
SFA-HK-S-BNC	Single hanger kit, short working distance, BNC: SFA-LHC-BNC + SFA-LHH-S	kit
SFA-DHK-L	Dual hanger kit, long working distance, V1: SFA-DLHC + 2x SFA-LHH-L	kit
SFA-DHK-S	Dual hanger kit, short working distance, V1: SFA-DLHC + 2x SFA-LHH-S	kit
SFA-DHK-L-BNC	Dual hanger kit, long working distance, BNC: SFA-DLHC-BNC + 2x SFA-LHH-L	kit
SFA-DHK-S-BNC	Dual hanger kit, short working distance, BNC: SFA-DLHC-BNC + 2x SFA-LHH-S	kit

Stereo Microscope Fluorescence Adapter for Education

The NIGHTSEA Stereo Microscope Fluorescence Adapter (SFA) is a great way to use fluorescence in education. As soon as we introduced the SFA we had researchers saying "Now I can use fluorescence in my classes...". Fluorescent transgenic animals are a great way to teach genetics, but without a way to visualize them you can't take advantage of this. The big barrier to using fluorescence has been the cost and complexity of fluorescence microscopes. You are just not going to turn a group of inexperienced undergraduates loose on your $25k or more lab system.

The NIGHTSEA SFA lets you put your existing stereo microscopes to use for fluorescence. You can acquire dozens of SFAs for the cost of just one research fluorescence microscope, and several universities have already done this – one purchased 28 and another purchased 30! The cost? Less than $24k total for each of these purchases.

Here are comments from a faculty member at Colgate University:

Students in Developmental Biology Lab were examining the effects of pharmacological agents on development of zebrafish embryos. In order to better visualize the development of the nervous system and vasculature, we used transgenic fish that expressed GFP either throughout their nervous system or in the developing vasculature. The NIGHTSEA system easily adapted to our dissection scopes and allowed students to observe the development of their fish at several different time-points. They could readily observe the transgene expression, and it helped solidify the phenotypes they were observing and allowed them to determine an optimal time to fix their fish for analysis under the compound microscope.

For quick screens it actually worked perfectly well in a bright room. For more intimate looking (more than presence/absence calls), we turned out the room lights. Worked better than I'd hoped it would.

Case Study:

Using routine fluorescence to sort *Drosophila* larvae

The Problem

Dr. Laura Reed (Dept. of Biological Sciences, University of Alabama, Tuscaloosa) heads a research program to investigate whether mutations in specific genes in fruit flies, *Drosophila melanogaster*, affect triglyceride storage.

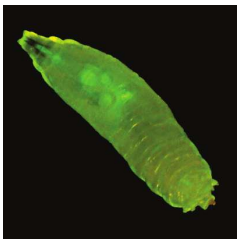


Figure 1. Non-mutant Drosophila melanogaster expressing GFP. © NIGHTSEA/Charles Mazel.

To gather sufficient material for analysis, Dr. Reed requires large numbers of larvae of each genotype. Her program involves testing 84 different genotypes and, for each genotype, 200 or more larvae. A special strain of fruit flies has been genetically engineered to express Green Fluorescent Protein (GFP) driven by an actin promoter (Figure 1). Only the flies without the mutations fluoresce. The clear difference between fluorescent and non-fluorescent larvae makes them easy to sort.

For best results, the larvae need to be collected, sorted, and frozen when at their largest, but before they pupate. However, they are at this stage for only about six hours. With 84 genotypes to test and 200+ larvae per genotype, sorting is a major challenge. While Dr. Reed has a large pool of undergraduates available for sorting, the greater challenge was that she only had access to borrowed time on another lab's research fluorescence stereo microscope.

The Practical Solution

Dr. Reed visited the NIGHTSEA booth at the annual Drosophila Research Conference and tested the Stereo Microscope Fluorescence Adapter (SFA) system.

She immediately realized the potential of putting both her undergraduates and four of her existing lab-grade stereo microscopes to work. The SFA provided a practical, economical solution for her limited equipment.

For Dr. Reed, the Royal Blue excitation/emission set provides excellent results (Figure 2, 3).

Figure 2. Larval sorting under ambient lighting.

SFA Advantages

NIGHTSEA's Stereo Microscope Fluorescence Adapters offer a number of advantages. First, they require no modification to your existing microscope. They just click into place, making them easy to use and easy to exchange, either on one microscope or between different microscopes in the lab.

Secondly, SFAs are economical and expandable. Since Dr. Reed currently works only with GFP (blue excitation/green fluorescence), she only needed to purchase one version of SFA. However, as the needs of her lab grow, additional sets can readily be added.

Figure 3. Students sort larvae using NIGHTSEA's SFA in Royal Blue. Dr. Reed now has shifts of two to four undergrads sorting in parallel.

Finally, as demonstrated by Figure 2, SFA's bright illumination and excellent barrier filters allow many fluorescence experiments to be conducted under near-ambient lighting. In this case, the overhead lights were turned off and the blinds closed, but the room does not need to be in complete darkness.

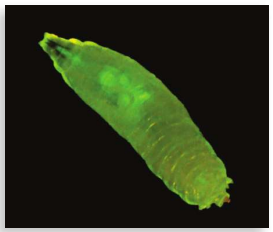
As for Dr. Reed? Using NIGHTSEA's SFA, she routinely has shifts of two to four undergrads at a time, sorting *Drosophila* larvae in parallel. 84 genotypes? 200 larvae per experiment? Problem solved!

Sorting Fluorescent Transgenics

The Model SFA Stereo Microscope Fluorescence Adapter is a great workhorse tool for screening and sorting your fluorescent transgenics. It's an economical way for new faculty to use their limited start-up budgets to get right to work with fluorescence without waiting for a big grant to come in. Some labs that already own high end fluorescence microscopes are purchasing the adapters to put their existing conventional stereo microscopes to use to relieve the burden on the more elaborate systems.

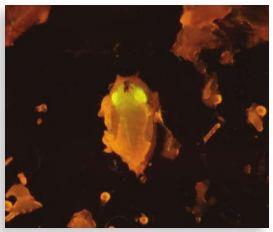
Fluorescing *Drosophila*

The pictures of fluorescing *Drosophila* larvae and adults in this gallery were all taken using the NIGHTSEA Stereo Microscope Fluorescence Adapter.



Drosophila larva, GFP actin © *NIGHTSEA/ Charles Mazel.*

Drosophila larva, UAS-Tomato Tubulin GAL4 © *NIGHTSEA/Charles Mazel.*

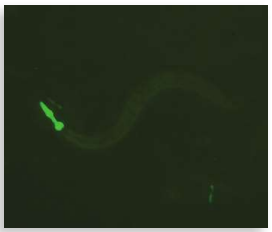


Drosophila larva, YFP eyes © *NIGHTSEA/ Charles Mazel.*

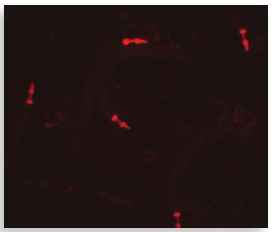
Drosophila adult, Venus in muscle © *NIGHTSEA/Charles Mazel.*

Fluorescing *C. elegans*

The pictures of fluorescing transgenic *C. elegans* in this gallery were all taken using the NIGHTSEA Stereo Microscope Fluorescence Adapter.

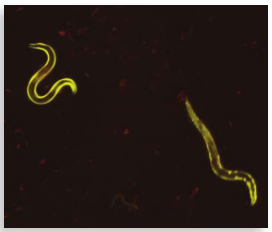


GFP *C. elegans*. © NIGHTSEA/Charles Mazel



mCherry *C. elegans*. © NIGHTSEA/ Charles Mazel

YFP *C. elegans*. © NIGHTSEA/Charles Mazel

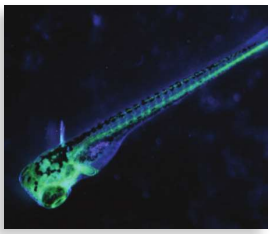


YFP *C. elegans*. © NIGHTSEA/Charles Mazel

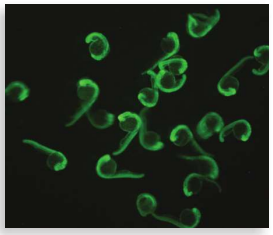
Fluorescing Zebrafish

The pictures of fluorescing zebrafish embryos and juveniles in this gallery were all taken using the NIGHTSEA Stereo Microscope Fluorescence Adapter.

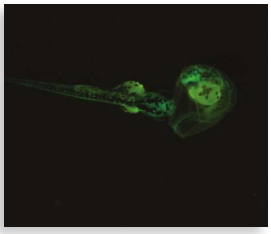
GFP-fluorescent zebrafish and non-fluorescent sibling © *NIGHTSEA/ Charles Mazel.*



Zebrafish - GFP fluorescence © *NIGHTSEA/ Charles Mazel.*



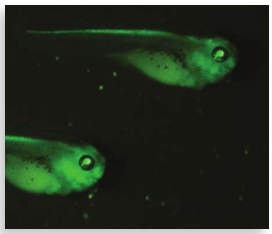
Zebrafish embryos - histone H2B-Dendra2 © *NIGHTSEA/Charles Mazel.*



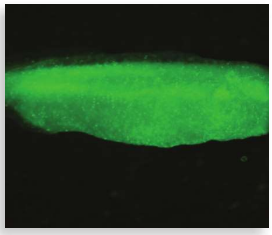
GFP-histone zebrafish © *NIGHTSEA/Charles Mazel.*

Fluorescing *Xenopus*

All of the photographs below were taken with a Canon Rebel T2i camera mounted on a Motic trinocular stereo microscope with the NIGHTSEA Stereo Microscope Fluorescence Adapter for illumination and filtering.

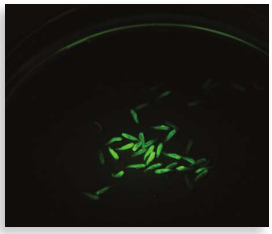


Stage 41 *X. tropicalis*, transgenic OTX-GFP eyes. Photograph © NIGHTSEA/ Charles Mazel



Stage 29-30 *X. laevis*, messenger RNA injected ubiquitous GFP and membrane RFP. Photograph © NIGHTSEA/Charles Mazel

Collection of Stage 37-38 *X. laevis*, messenger RNA injected ubiquitous GFP and membrane RFP viewed through shield filter for sorting. Photograph © NIGHTSEA/Charles Mazel

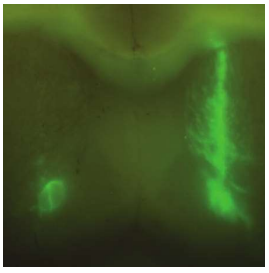


Collection of Stage 37-38 *X. laevis*, messenger RNA injected ubiquitous GFP and membrane RFP viewed through shield filter for sorting. Photograph © NIGHTSEA/Charles Mazel

Fluorescence in the Lab

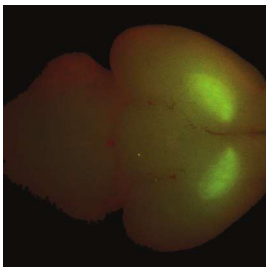
Fluorescence-Aided Dissection of FP-Labeled Structures

The most common application of NIGHTSEA lights for researchers using fluorescent proteins is in sorting out which members of the next generation are fluorescent and which are not. Whether working with mouse pups, Drosophila larvae, zebrafish, or other organisms, the lights make it easy to see which offspring have inherited the fluorescence trait and which have not.



Region of mouse brain into which EGFP-tagged lentovirus vector has been injected. © Marina Wolf, Rosalind Franklin University.

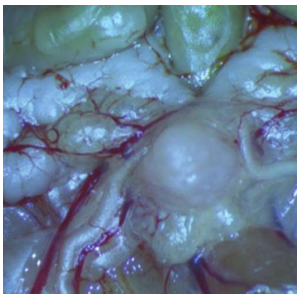
Some researchers are going beyond just identifying labeled subjects and using fluorescence to actively aid in extracting GFP-tagged structures. In one case the researchers needed to extract only the GFP-tagged dorsal striatum from within mouse brains. They likened this to "isolating a lump of oatmeal from within a larger lump of oatmeal". When they switched from doing the dissection in white light to using the NIGHTSEA flashlight and glasses they could easily see which portion of the brain to target. It made the dissection both faster and more accurate.



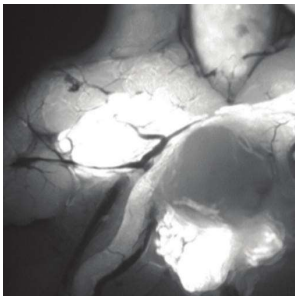
GFP-labeled dorsal striatum in mouse brain. © NIGHTSEA/Charles Mazel. Sample photographed at laboratory of Stefano Vicini, Georgetown University.

In another case the researchers needed to punch tissue from the nucleus accumbens of a mouse for subsequent biochemical analysis. Being able to see the fluorescence in real time made it easy to target the right structure. (See - Xuan Li and Marina E. Wolf, 2011. Visualization of virus infected brain regions using a GFP-illuminating flashlight enables accurate and rapid dissection for biochemical analysis. J. of Neuroscience Methods, Vol. 201, Issue 1, pp. 177-179.)

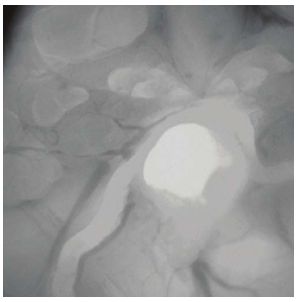
Dr. Xin Lu, a researcher at the MD Anderson Cancer Center in Houston, contributed some nice images of his work with GFP-tagged tumors in a universally red-fluorescent (RFP) mouse. Dr. Lu purchased the NIGHTSEA Stereo Microscope Fluorescence Adapter to add to his Nikon SMZ745 stereo microscope so that the tumor would really stand out, making it easier to dissect. The photos below show the image (1) in white light, (2) using the Royal Blue excitation/emission set to capture the green fluorescence, (3) using the Green excitation/emission set to capture the red fluorescence, and finally (4) a color composite of the green and red channel images.



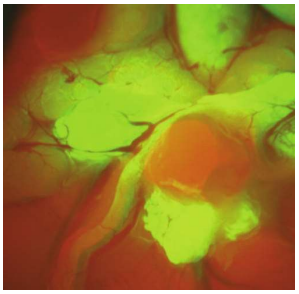
(1) White light – GFP tumor in RFP mouse. Exposure made with white light. © Xin Lu, MD Anderson Cancer Center



(2) Green fluorescence – GFP tumor in RFP mouse. Exposure made to highlight the green fluorescence. © Xin Lu, MD Anderson Cancer Center



(3) Red fluorescence – GFP tumor in RFP mouse. Exposure made to highlight the red fluorescence.© Xin Lu, MD Anderson Cancer Center



(4) Fluorescence color composite – GFP tumor in RFP mouse. Composite of green and red fluorescence. © Xin Lu, MD Anderson Cancer Center

Prescreening for Fluorescence

Are you frustrated booking time on a confocal, 2-photon, or high resolution fluorescence microscope at your imaging core facility, only to find that your sample preparation does not fluoresce?

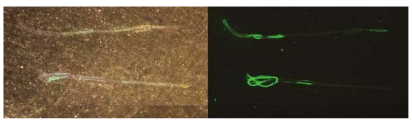
With NIGHTSEA's Stereo Microscope Fluorescence Adapter you can save time and money by using the routine stereo microscopes you already own to prescreen your samples for successful introduction of fluorescence before you book time at the imaging core.

Fluorescence is a powerful and widely used tool for a variety of studies in cell biology, neuroscience, and other fields. The latest imaging tools provide remarkable specificity, resolution and tissue penetration. These benefits come with costs both in hourly fees and access limitations.

The Problem:
The high end compound or stereoscopic fluorescence microscopes, confocal microscopes, and 2-photon imaging systems needed for high resolution fluorescence imaging are almost always a limited resource located in centralized microscopy core facilities and shared on a sign-up basis. Hourly use fees are generally in the $20 - $100 range, depending on the microscope.

The process of introducing a fluorophore into a specimen is not always successful. This can lead to frustration and unnecessary cost when you schedule time on a microscope and bring your sample to the core facility, only to find that there is no fluorescence to image.

The Practical Solution:
The NIGHTSEA Stereo Microscope Fluorescence Adapter enables you to pre-screen your specimens on a standard stereo microscope. The detail is not important - the presence/absence and general location of fluorescence lets you know whether it is worth taking your specimen to the imaging core. Between the direct expense of the use fee and the time wasted to look at a non-fluorescent specimen it will not take many saved trips for the NIGHTSEA system to more than pay for itself.



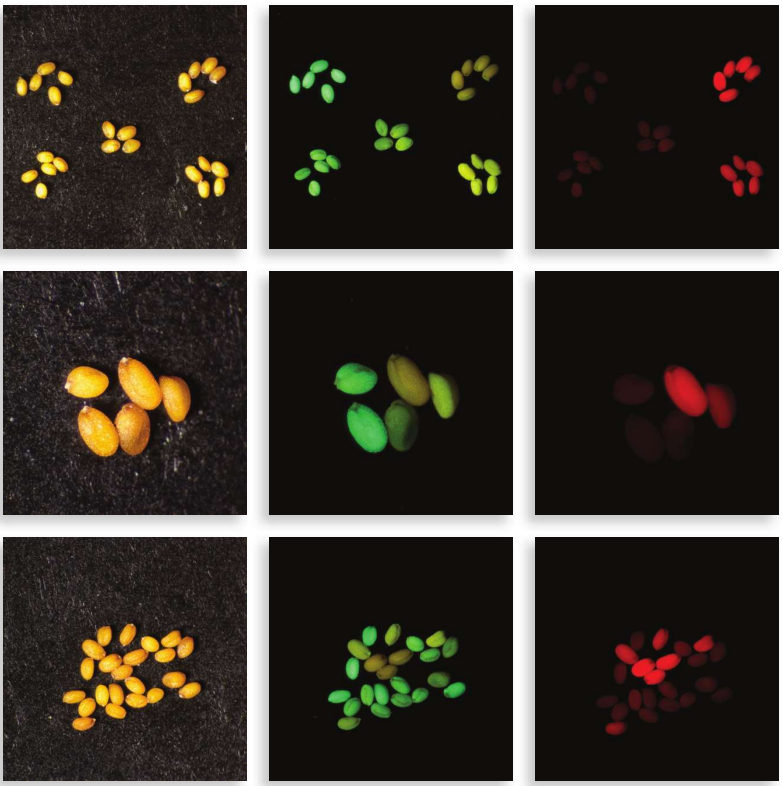
Rabbit psoas muscle fibers stained with Alexa Fluor 488 Phalloidin, in white light and fluorescence. Images made with Motic SMZ-186 microscope using NIGHTSEA's white LED (left) and the Royal Blue excitation/emission light+filter set. Samples courtesy of Dr. Beth Brainerd and Natividad Chen, Brown University.

Fluorescent *Arabidopsis* Seeds

Arabidopsis thaliana is a small flowering plant that is widely used as a model organism for a variety of genetic studies. Dr. Scott Poethig and colleagues at the University of Pennsylvania have developed a novel transgenic strain of *A. thaliana* that has chromosomal segments with eGFP on one end and dsRed at the other. The segments can be followed in genetic crosses and manipulated via recombination. The transgenic strains will enable a variety of experiments, including phenotypic analyses of mutations with weak or environmentally sensitive phenotypes. They are intended for use in both research and education.

Dr. Poethig was looking for a cost-effective way to sort the genetically modified seeds in a teaching setting. He learned about the new NIGHTSEA Stereo Microscope Fluorescence Adapter and sent a set of seeds for testing. There were five varieties – strong and weak green fluorescence, strong and weak red fluorescence, and non-fluorescent control. All of the variations were easy to see, even with the room lights on.

In each row the image on the left was taken with white light illumination, the image in the center with the Royal Blue excitation/emission combination, and the image on the right with the Green excitation/emission combination. Equipment – NIGHTSEA Stereo Microscope Fluorescence Adapter, Motic SMZ168 trinocular stereo microscope, Canon EOS Rebel T2i camera.



Coral Recruitment Through the Microscope

Fluorescence is a valuable tool for coral recruitment research and one of the ways to apply it is to use a stereo microscope to examine corals on settlement tiles or other surfaces. The images to the right are coral polyps viewed through a stereo microscope. The first eight are pairs of white-light (left) and fluorescence (right) images of the same area on settlement tiles. These were made by Dr. Alina Szmant (UNCW) during a research project with NIGHTSEA's Charles Mazel to develop fluorescence tools for coral recruitment research.

The next four images were made by Wade Cooper as part of his research at Rosenstiel School of Marine & Atmospheric Science