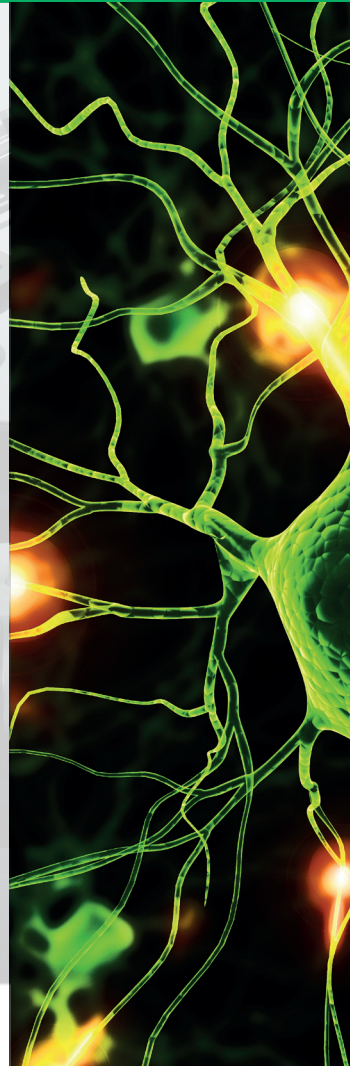
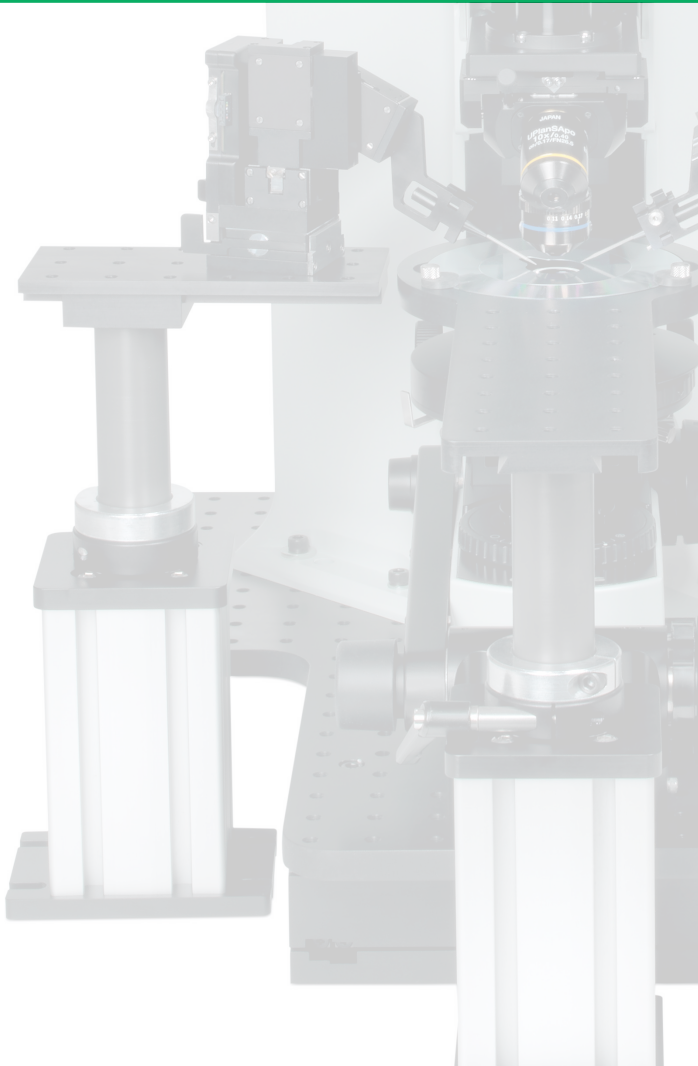


Prior Neuroscience Solutions



Introduction and Contents

Since 1919 Prior Scientific has designed, manufactured and distributed equipment for microscopy, in the process achieving a reputation for superb quality and excellent customer service. Prior Scientific provides a full range of equipment that can be utilised to greatly enhance your imaging system. We are ideally suited to provide solutions for neuroscientists and electrophysiologists.

Prior's extensive range of equipment is designed to integrate with as many microscopes as possible. Our **ProScan® III controllers** accurately control our stage, focus and illumination equipment, whilst integrating seamlessly with the vast majority of common imaging software. Precise **motorised stages** are capable of extremely fine and repeatable movement in the X and Y dimensions, whilst **focus mechanisms** and the **NanoScanZ** provide similar control in the Z-axis.

The **Z-Decks** are stages designed specifically for neuroscience and electrophysiology; and include a variant with an integrated motorised stage. **Both metal halide and LED illumination** is available, providing an extensive choice of high quality illumination.

Finally, our range of **robotic loaders** provide automated sample handling.

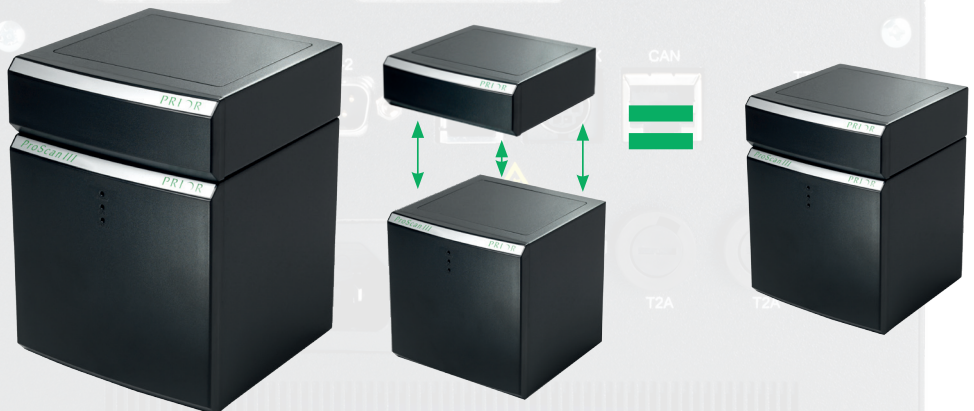
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ProScan III Control Centre

Prior's **ProScan III control system** is a versatile and powerful system allowing control of multiple components of a microscope system including the stage, focus mechanisms, shutters, filter wheels and other accessories, as well as integrating with a wide variety of imaging software.

- Controls a wide variety of Prior equipment and compatible with the majority of image analysis software; allowing full control of the entire microscope system from one computer.
- Control via computer is done via USB or RS232 communication. Programmable TTL is supplied to allow fast analogue interfacing and control of external peripherals, such as cameras.
- A free Software Development Toolkit allows integration into third party software.
- Multifunctional PS3|100 Interactive Control Centre controls stage, focus, filter wheel and shutter movement, as well as providing system feedback to the user.
- Space saving design reduces pressure on valuable laboratory space. Ancillary boxes can be easily added to increase functionality.
- The ProScan III can automatically reduce the current to zero whilst the stage is at rest, meaning the controller does not interfere with recording.



Motorised Stages

Prior's range of motorised stages give excellent control over XY movement. In addition to exceptionally high levels of precision, superb repeatability and excellent resolution, stage movement is also smooth and quiet, reducing disruption both to samples and the experimental set up. Prior's patented Intelligent Scanning Technology (IST) further increases accuracy.

- A wide variety of stages are available to meet the end user's specific requirements. A wide range of incubators and sample holders are also available, further expanding the range of applications possible. Customisation of stages, incubators and sample holders is also possible.
- Upright microscopes benefit from, in addition to the standard **H10I** stepper motor stages, the **H10IF** stage with a flat top and the **H138A** stage which can hold up to 8 slides.
- Standard **H117** stepper motor stages are available to fit most inverted microscopes. The surface area of these stages can be extended by the addition of wings.
- Inverted microscopes can also benefit from **HLD117 Linear Motor stages**, for when the very best in accuracy, speed and smoothness is required. Linear stages have a greater smoothness of movement, repeatability (0.15 µm) and a larger range of speeds (from 300 mm/s to 1 µm/s) than conventional stepper motor stages. Their flat top design also allows easier access to the analysis area and more flexibility in terms of experimental set up.



Z-Deck and Translation Stage

Prior Scientific's Z-Deck provides a stable and height adjustable platform. Designed specifically for electrophysiological microscopes, such as the Zeiss Axioexaminer, the Nikon Ni and FNI, and the Olympus 51/61 WI, this product is ideal for applications requiring stability and the ability to change focus heights within seconds, with the design of the platform allowing Köhler illumination at a range of focus heights. The large surface area of the Z-Deck allows the addition of equipment such as micromanipulators and incubators.

- The **Motorised Z-Deck** can be controlled with the Prior ProScan III system, and includes an extremely accurate motorised stage, which is fully compatible with Prior's wide range of sample holders. The Motorised Z-Deck has a large range of travel allowing the imaging of large samples with speed and precision.
- The **Manual Z-Deck** has a top plate which can be moved via manual control, for applications which must be performed in electrical silence
- Finally the **Fixed Z-Deck** is ideal for researchers who do not require a movable top plate, but do want a height adjustable, stable platform designed specifically for neuroscience and electrophysiological applications.
- In addition, if the user prefers to move the microscope rather than the platform, the **Motorised Translation Stage** is available, allowing the microscope to move and further increasing the stability of the experimental set up.



Adjustable Pillar Mounts

New from Prior Scientific are the **HZP series of adjustable rigid mounting posts**. Available in a range of heights from 150 mm to 300 mm, these rigid post mounts provide a simple, flexible stable and low cost solution.

- Compatible with Sensapex manipulators, as well as other micromanipulators, these mounts allow an extensive variety of set up configurations for both upright and inverted microscopes.
- Compatible with 6 mm optical breadboards and have a 60 degree sliding dovetail for smooth and stable positioning.
- A range of holders - for micromanipulators and samples - as well as the ability to alter their heights without the use of tools increases the versatility of these mounts still further.



Micromanipulators



Prior Scientific is proud to act as the distributors for the new range of **micromanipulators** from Sensusapex. These micromanipulators are ideal for the most complex and demanding of applications, representing a major step forward in micromanipulator technology.

- With a superb, best in class XYZ resolution of 7 nm and an extensive positioning range of 20 mm, these devices possess both reach and accuracy,
- Zero drift solid state technology prevents the manipulators moving when powered down. When in recording mode, no electrical noise is produced, reducing interference with the experiment.
- Tunable, high acceleration piezo controlled thrusts allow clean cell membrane penetration.
- Easy to use pipette exchange mechanisms allow swift changes to be made, whilst the compact design increases the number that can be positioned around a sample and allows greater flexibility in experimental set up.
- For the most demanding applications one controller can control up to 14 manipulators.



Focussing Devices

Prior also produces a range of focussing devices to enable the fine control needed for applications such as Z-stacking or 3D reconstruction.

- The **PS3HI22R** focus motor provides a range of easy to fit focus mechanisms for accurate control of microscope focussing. Encoded focus and optical limit switches are supported by the ProScan III. Step sizes as low as 2 nm give precise and repeatable positioning for the Z axis. For high speed focus moves the motor can be driven up to 60 rev/s.
- A range of **focus blocks** are available for more specialised or OEM applications. Motorised, encoded and manual variants are available.
- The **NanoScanZ** piezo motor system from Prior has up to 1 nm repeatability in the Z axis, allowing the user extremely fine nanometre scale control combined with ultra fast movement over 100, 200 or 400 μm .



Metal Halide Illumination Sources

The **Lumen 200 range** of illuminators provide a powerful light source, ideal for many fluorescence applications. The spectral output closely mirrors HBO bulbs but offers more even, intensive and consistent illumination with a longer lasting bulb. As the light produced has a similar spectrum to HBO bulbs it excellently and efficiently excites the majority of commonly used dyes.

- The **Lumen 200** is a metal halide light source with an operational lifespan of at least 2000 hours. The Lumen 210 and the Lumen 220 have an extended spectral range.
- The **Lumen 200S** is provided with mechanical shutters, allowing users to close the shutter completely within 30 ms, and reducing the risk of photo-bleaching valuable samples.



- The **Lumen 200Pro** has a number of features that further enhance the fluorescence illumination provided by the Lumen 200. The Lumen 200Pro has a mechanical filter wheel, accepting up to 6 filters allowing changes of wavelength within 55 ms, and automatic shutters which can cut off light within 20ms and is controllable via the ProScan III allowing it to be easily integrated into the overall microscopy system.

LED Illumination

Light Emitting Diodes (LEDs) have a number of advantages over other forms of illumination. They can be instantly turned on or off, are easy to control, and produce minimal amounts of heat or vibration, as well as lasting for tens of thousands of hours.

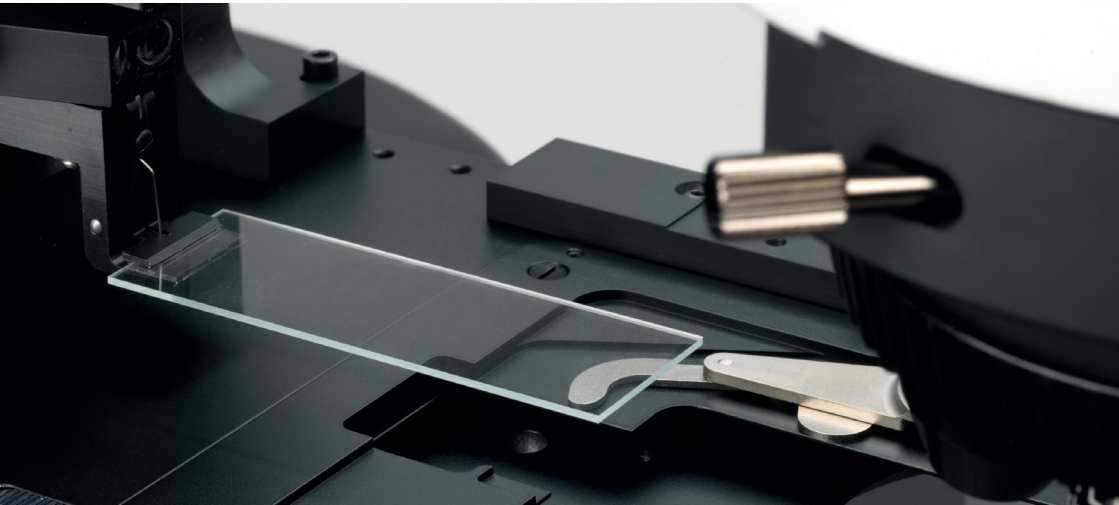
- The **Brightfield LED** provides high intensity, even light ideal for brightfield, DIC or phase contrast techniques and fits directly to the lamphouse.
- The **Lumen 100** can be equipped with one of multiple wavelengths from 365 to 660 nm, as well as a white light LED.



Robotic Sample Loaders

Our range of robotic loaders provide the potential to set up a completely automated imaging system. With devices available for both inverted (the well plate loader) and upright microscopes (the slide loader) robotic samples loaders rapidly, safely and efficiently load and unload samples.

- Providing safe and efficient slide loading and unloading, the **PL200 slide loader** can accommodate up to 200 slides, with a load/unload cycle of as little as 15 seconds. To safeguard valuable space, the PL200 has a compact, space-saving design, with a footprint of just 0.16 m². A single metal base plate creates a system that is virtually vibration free, stable and robust.

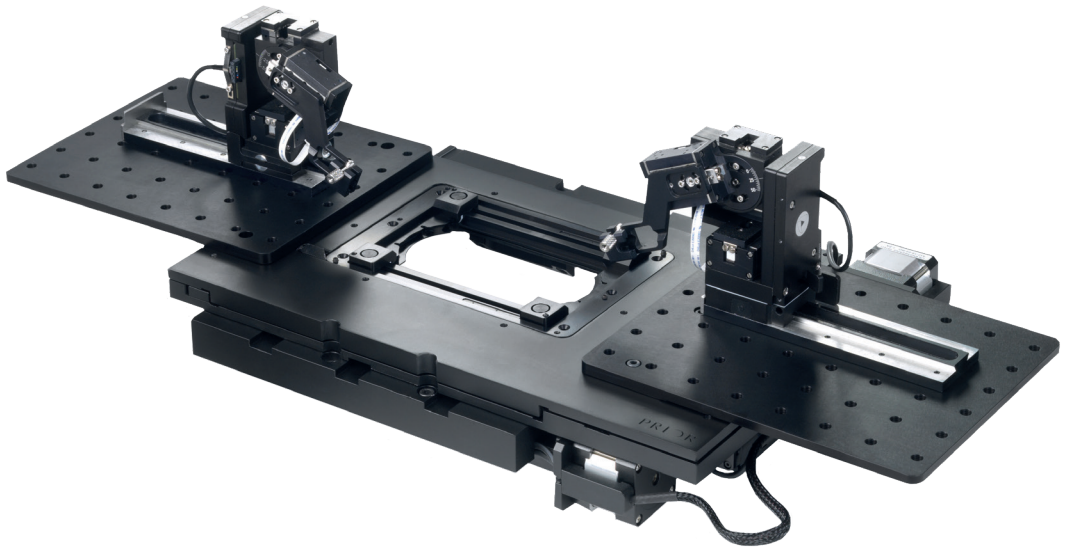


- Inverted microscopes benefit from the addition of a **PLW20 Well Plate Loader**, which can accommodate up to 20 well plates, with a load/unload cycle of as little as 29 seconds. Inserts holding 4 standard slides compatible with the PLW20 are available.
- Both loaders are equipped with a barcode reader that can scan the details of the slide; ensuring that each image is associated with the correct slide and thus safeguarding data integrity.

Other equipment and OEM projects

A wide range of other products are also available, in order to meet the exact specifications of the end user. For more information about these, please visit www.prior.com, or speak to a Prior representative. Various sample holders are available, including incubators, to allow live cell imaging and other, more specialised applications.

Prior Scientific also has the capacity to customise our existing products, as well as manufacture entirely new ones. With a team of expert engineers and scientists, decades of experience in the field of optical microscopy, and facilities equipped with cutting edge manufacturing and design technologies, we make an ideal partner for OEM and customised solutions.



Notes

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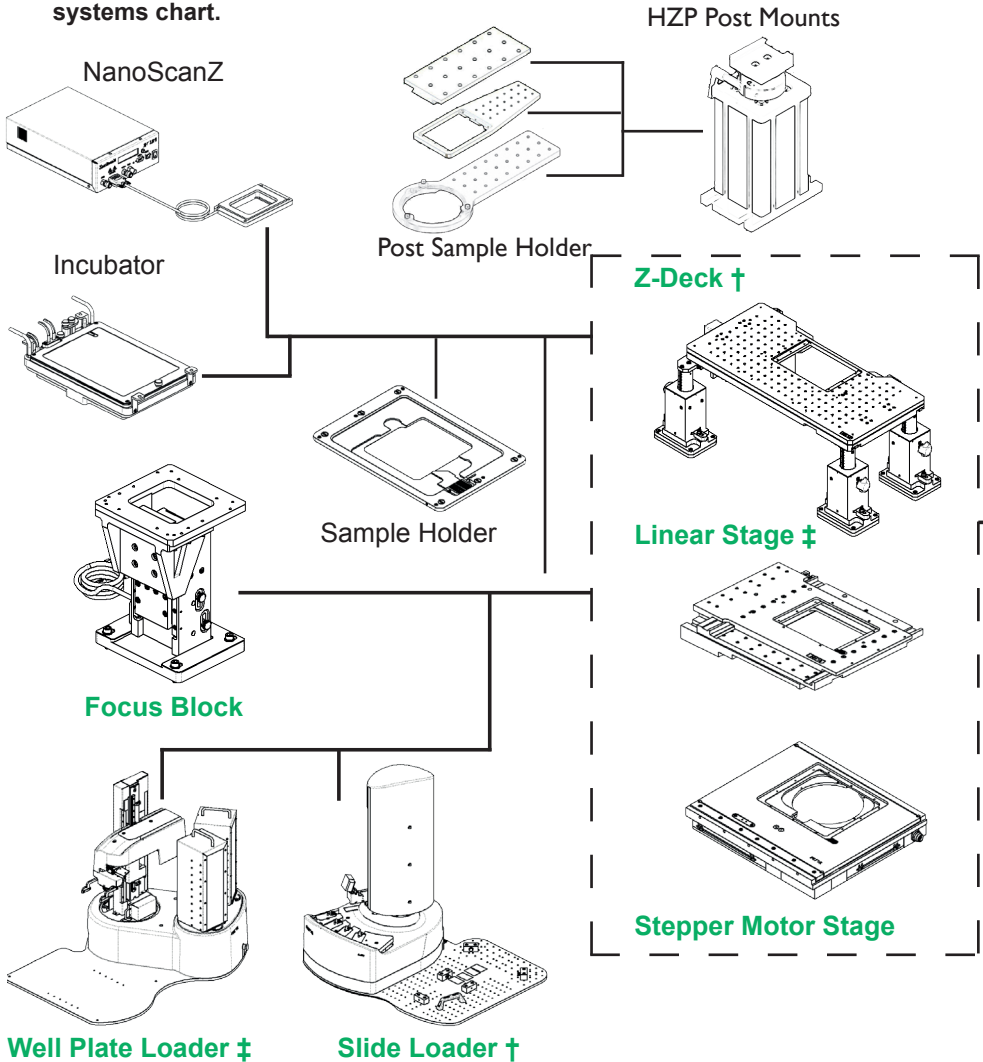
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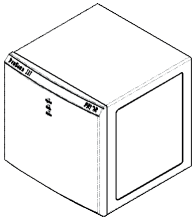
Generic System for Neuroscience

The Guide below shows how the various components manufactured by Prior Scientific can fit together into a whole system. **Note that this is a generic guide - for the systems that are possible on a specific microscope, please see the relevant systems chart.**



Generic System for Neuroscience

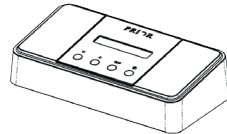
ProScan III Controller



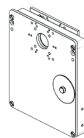
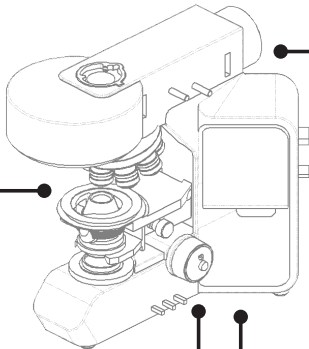
Lumen 200 Pro

Lumen 200 S

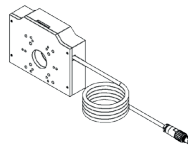
Lumen 200



Lumen 100-LED

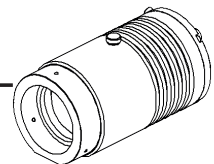


Filters

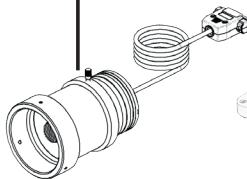


Shutters

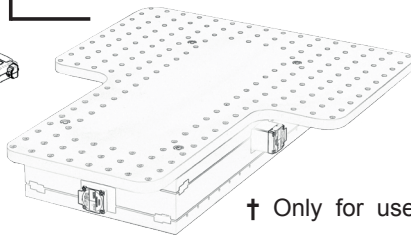
Translation Stage



Brightfield



Focus Motor



† Only for use with upright microscopes

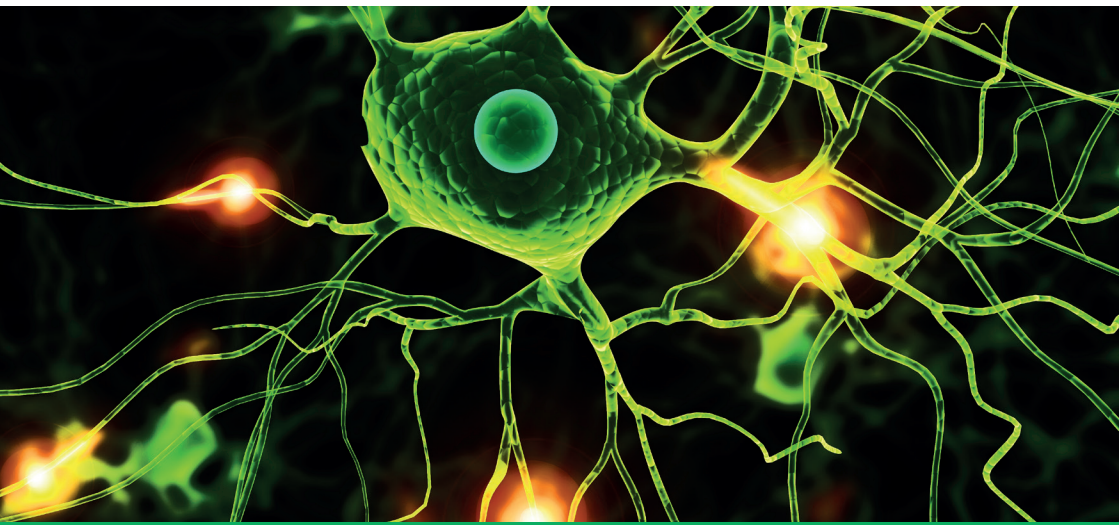
‡ Only for use with inverted microscopes

Green indicates a ProScan III required.

Prior Scientific Electrophysiology and Neuroscience

Prior Scientific manufactures a wide range of products for a range of microscopic applications, from the life sciences to metallurgy. Prior produces systems for automating microscopy processes, filter wheels, sample holders, motorised stages and many other products for enhancing microscopy work. To see our full range of products, please contact us or visit our website:

www.prior.com



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