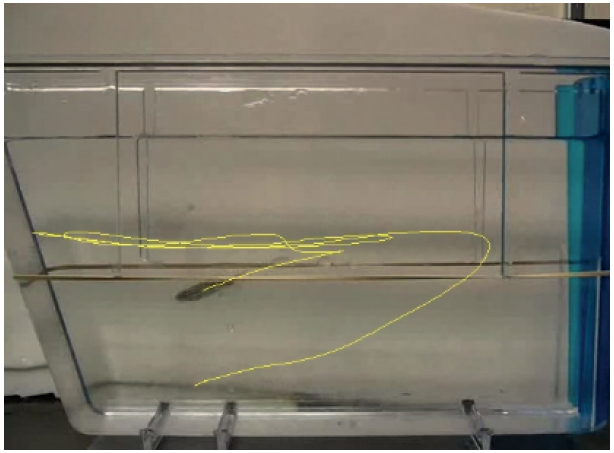
EthoVision XT

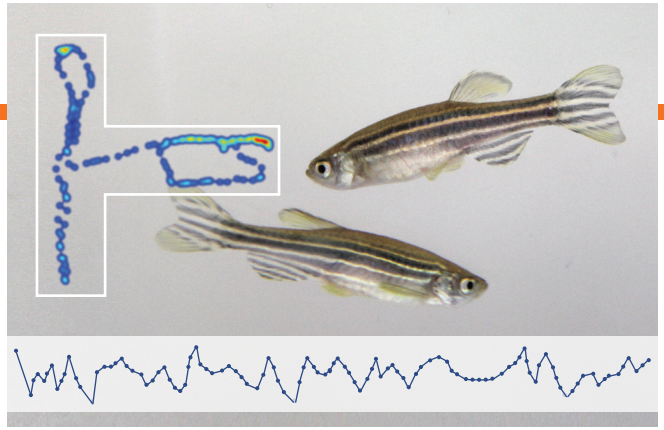
- *Reliable tracking of any animal*
- *Cost-effective & easy-to-use software*
- *High-throughput & high-content testing*
- *Powerful analysis tools for insightful results*

A VERSATILE TOOL

EthoVision® XT is the most flexible and versatile system for highly accurate tracking, activity detection, and analysis of animal movement, activity, and behavior. A special algorithm for zebrafish, combined with the multiple body points tracking algorithm, provides accurate data on swimming paths and patterns. You can track multiple fish together and automatically measure inter-fish distances (for shoal-density), as well as track in multiple tanks simultaneously.

Because EthoVision XT is not limited to one specific kind of test, you can use it for multiple studies in the lab; from small to large aquaria, from T-maze to well plate, from activity measurements to learning tasks. The ideal tool!





WWW.NOLDUS.COM/ETHOVISION

A PLATFORM TO BUILD ON

As your research progresses, your EthoVision XT video tracking platform evolves. Tracking of multiple body points is always part of EthoVision XT Base. But you might want to customize your solution. Incorporate the control of lights, audio, optogenetics, a tapping device or special 3D tracking. You can even track multiple animals in social interaction studies. Or do you want to increase throughput with multiple arenas? No problem. With several add-ons available, you truly have a platform to build on.

BENEFITS

EthoVision XT is by far the most cited video tracking software. So why do researchers like it? Transparency is key. Instead of being a *'black box'*, EthoVision XT gives you full insight. You can see all your data, as numbers and a track while having full control over these datasets. The detection of your animal is very accurate, so your tests can be sensitive while a wide range of analysis tools help you get everything you need out of your data effectively and efficiently. Great visuals (tracks, graphs, heatmaps) can also be exported for publication.

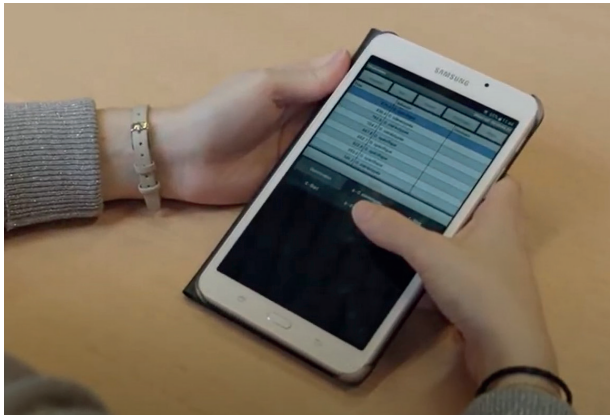
Are you a novice and need some help along the way? EthoVision XT has built-in video tutorials too, right where you need them. More experienced users love the quick set-up options, templates, and advanced creating of custom parameters.

The Observer XT

- *Describe and score behavior in detail*
- *Build and share your ethograms*
- *Collect, integrate, analyze, and manage data*
- *Share the work and perform reliability analysis*

BEHAVIORAL SCORING AT YOUR FINGERTIPS

Some studies require a more detailed look at behavior; this is where manual observation can provide a more tailored solution. This can however be a laborious process, but The Observer® XT is here to help streamline that process. This user-friendly event logging software helps to collect, analyze, and present your data.



The Observer XT supports the entire workflow of a research project, from ethogram to results presentation. You can score live, from a single video, from multiple camera angles at once, and even on the go with Pocket Observer on your smartphone. Coding can be carried out continuously, or using instantaneous sampling, or a combination while easily being able to share the work with coding licenses.

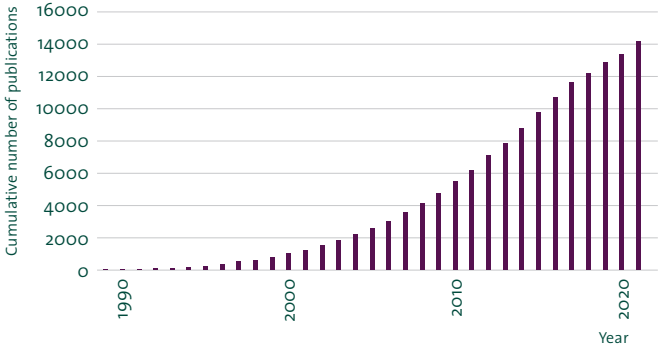
WWW.NOLDUS.COM/OBSERVER-ANIMAL

CLEAR VISUALIZATIONS & ANALYSIS POWER

The Observer XT provides an intuitive interface for the visualization and analysis of data. By creating an event log, you can easily spot any artifacts, or already get an understanding for your data. These event logs can be displayed per individual video and customized with any desired behavioral readout. This also pushes the next step, the analysis power of The Observer XT, to the next level.

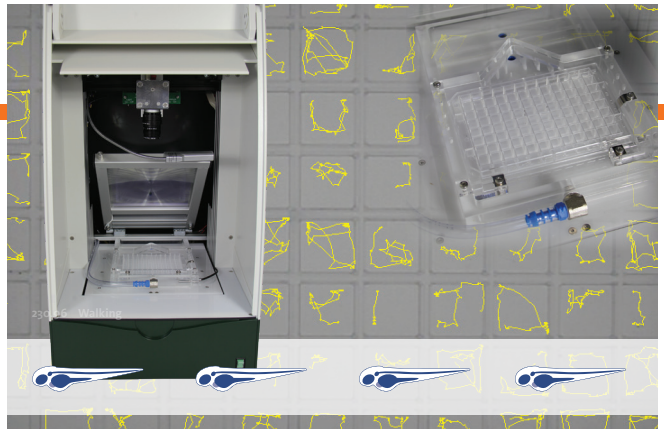
HIGH PUBLICATION POWER

Clear visualizations, analysis power and Noldus' establishment in the field of behavioral neuroscience, has been proven to enable you to publish your work successfully in scientific journals.



DanioVision

- *Zebrafish larvae activity monitoring*
- *High-throughput research*
- *Controlled plug-and-play environment*
- *Powered by EthoVision XT*



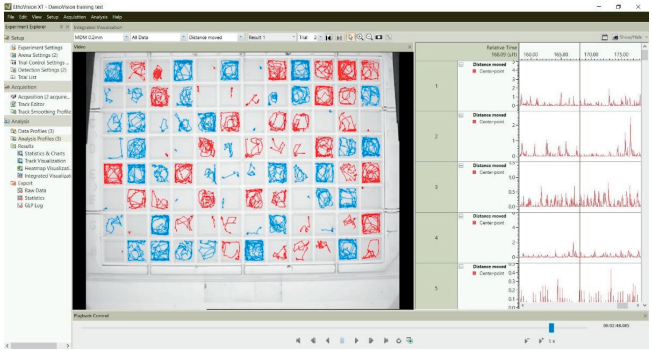
WWW.NOLDUS.COM/DANIOVISION

A COMPLETE SYSTEM

DanioVision™ is a complete system designed for high throughput testing of zebrafish larvae or other small organisms. The Observation Chamber provides a controlled testing environment, with built-in IR backlit well-plate/petridish/container holder, a high-speed digital camera, specialized lens to prevent distortion in the well-plate, and a white light that is programmable in the software. There is also enough room in the chamber for add-ons such as the Tapping Device, colored/white LED Toplight Unit, optogenetics equipment, or other custom options.

POWERED BY ETHOVISION XT

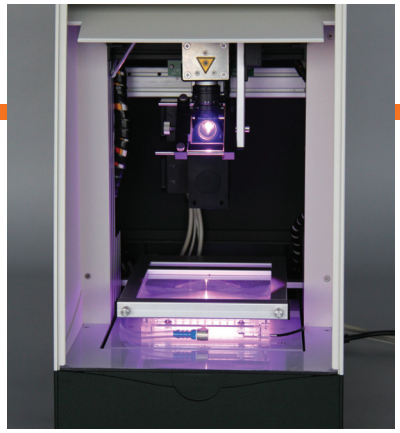
DanioVision is powered by our well validated, robust and reliable software platform: EthoVision XT. Tracking and data analysis is possible with a fully functional version of EthoVision XT, which can be used for other tracking experiments as well. DanioVision is, among others, designed for using well-plates. EthoVision XT is able to keep up with all of these wells, tracking them simultaneously (up to 100 subjects). EthoVision XT also allows for the programming of certain timed events in combination with its add-ons. Want to induce a startle response with tapping or light at a specific moment? It's possible with DanioVision. No manual interference is needed, removing possibility for human error from your data acquisition.



> *"DanioVision allows an easy solution to monitor and quantify physical activity and swimming behavior in a large number of larvae simultaneously."*
>
> DR. M. DEN HOED | UPPSALA UNIVERSITY, SWEDEN

LARVAL ACTIVITY

Larvae activity and movement patterns are basic measurements used in many studies. They can reveal information on stereotypic and epileptic behaviors, circadian rhythmicity, motor control, movement disorders, neural development, and more. DanioVision is a complete system designed for exactly these types of experiments with zebrafish (*Danio rerio*) larvae, and is often used in studies related to drug development, behavioral genetics, toxicology, and circadian rhythmicity.

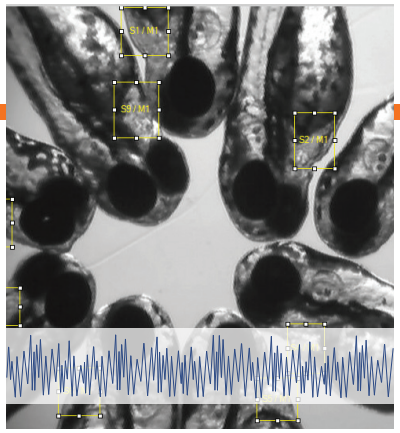


WWW.NOLDUS.COM/DANIOVISION

Optogenetics

- *Specifically for larvae*
- *Stimulate specific neurons*
- *2 or 3 wavelengths (LED)*
- *DanioVision & EthoVision XT*

Optogenetics in rodents can be impractical and invasive, due to the optic fiber insertion. There is no need for such an operation when performing optogenetics in zebrafish larvae. Because of their transparency, the correct wavelength of light, by a LED light source (Prizmatix), can be directly applied to specific neurons. This way the activity of those neurons can be controlled and downstream effects on behavior can be observed. The combination of DanioVison and EthoVision XT lends itself perfectly to programming and executing your optogenetic research.

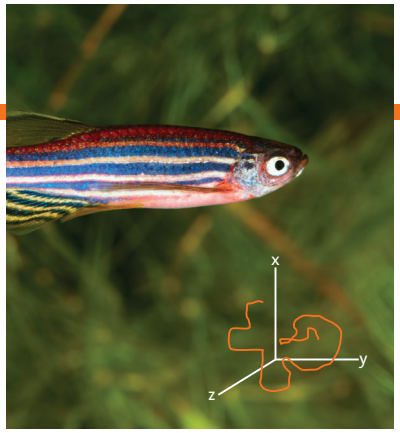


WWW.NOLDUS.COM/DANIOSCOPE

DanioScope

- *Non-invasive measuring*
- *Batch video analysis*
- *Behavioral data*
- *Morphological data*

DanioScope™ is a non-invasive video-based software tool that allows you to keep track of zebrafish embryo and larvae behavioral and morphological parameters. The program automatically detects the animals and their activity (tail coiling, convulsions) is automatically measured. You can measure the heartbeat of all larvae in the video by simply defining the heart areas. Blood and gut flow activity can be measured by indicating a circular area of interest. Last but not least, still images can be used to measure morphological parameters such as eye size, body length, and over time growth can be tracked.

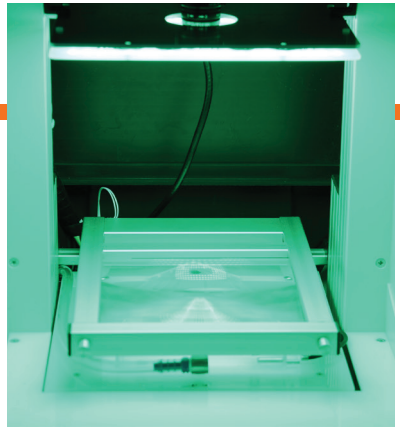


WWW.NOLDUS.COM/TRACK3D

Track3D

- *EthoVision XT add-on*
- *Track in the 3rd dimension*
- *Calibrated and accurate*
- *Not only zebrafish*

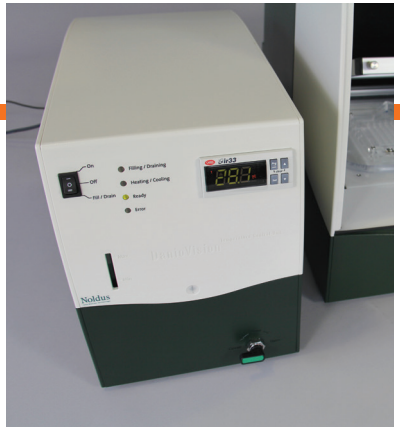
Sometimes when doing zebrafish research tracking swimming patterns in the 2-dimensional plane is not enough. Track3D allows you to track the movement of an animal in the third dimension. Two separate high-resolution cameras will record the animal simultaneously and produce a movement track in 3D. Before working with Track3D, it is essential to calibrate the system to your test design. A custom calibration is done especially for your study. After calibrating, you can record parameters like: swimming speed, mobility, angular movement, and the duration a fish spends in a certain zone.



Toplight Unit

- *White & colored LED*
- *No obstruction*
- *Natural positioning*
- *Control with EthoVison XT*

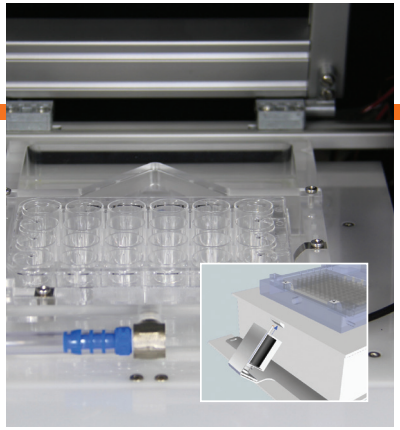
The Toplight Unit provides a light source coming from a *'natural'* top position. This positioning of this light also doesn't interfere with the video cameras. Since color preference differs between strains and experiments, the Toplight Unit provides options for light color and illumination. The LEDs contain red, blue, and green wavelengths on the one side, and white LEDs on the other. The intensity of the white LEDs goes up to 30,000 lux. This add-on can be easily programmed with Ethovision XT, to control the light based on time or behavioral indicators.



Temp. Control Unit

- *Both cooling & heating*
- *Accurate and constant*
- *No climatized rooms needed*
- *Easy to install*

Temperature has a major influence on zebrafish behavior. It impacts parameters like mobility. Therefore, it is important to have a constant control over the climate during your experiment. The Temperature Control Unit directly regulates the temperature in and around the well plates. This results in a constant temperature during your experiment. The add-on is compact, and can thus be easily incorporated in your set-up. The control unit is connected to the well plate through a flow-through system. The system doesn't disturb the fish and makes sure the temperature is constant for all plates.



Tapping Device

- *Stimulate startle responses*
- *Variable timing*
- *Adjustable intensity*
- *Control with EthoVison XT*

The startle response a zebrafish can display is neurologically similar to higher vertebrates. Therefore, testing the startle response of zebrafish can be applied to many neuroscientific studies. The Tapping Device is a way to easily induce a startle response. A solenoid is installed under the well plate in your DanioVision. With the help of EthoVision XT, you can set the intensity of the Tapping Device to 8 different levels. Furthermore, EthoVision can also control the timing of the Tapping Device. This results in a consistent stimulus, and makes the Tapping Device fully adaptable to your research.