

# FAQs

## DeltaVision Imaging Systems

Applied Precision provides comprehensive imaging solutions to help biologists in drug development to address disease-related questions for cellular and sub-cellular analyses beyond the limitations of conventional methods.

DeltaVision is a family of fully integrated, optimized microscopy systems designed to look at multiple probes and samples over longer periods of time than other imaging systems. These systems are uniquely suited for 3D and 2D live cell applications. As biological questions increase in complexity and sensitivity, there is a greater need for higher image quality. Improved resolution and contrast yield greater quantitative measurements, and therefore more reliable results.

### DeltaVision vs. Conventional Technologies

#### Q: What type of biological samples and conditions can I image on the DeltaVision?

A: Small, dim and live. The DeltaVision outperforms conventional systems on dim signals, small organisms and organelles in living cells. Custom engineered solid state illumination combined with hardware autofocus maximize the life of living cells, enabling data collections for days at a time. Fixed cell imaging also benefits from these performance improvements making the DeltaVision a versatile tool for microscopy.

#### Q: How does DeltaVision differ from other systems?

A: Widefield microscopy systems use lower intensities of light to image and collect more scattered light. This is less damaging to the sample but the images tend to appear blurry. Confocal systems use higher intensity light to improve contrast but this can damage the cells. DeltaVision delivers widefield light in a unique approach to optimize the delivery of light to the sample, while minimizing cell damage. The DeltaVision also integrates a unique restorative deconvolution algorithm to create better contrast and resolution that in many applications out performs confocal imaging.



DeltaVision® Elite Imaging System

#### Q: Where can I expect to see improvements with the DeltaVision over conventional systems?

A: In addition to improved image quality, especially in samples less than 35  $\mu\text{m}$  in thickness, the most significant areas of improvement are:

- 3D and time lapse imaging
- Accurate and repeatable collection of multiple fields of view during a time-lapse experiment (point visiting) to maximize data collection
- Quantitative cell measurements
- Quantitative fluorescent intensity measurements
- Quantitative intensity ratio calculations
- Multi-line TIRF applications
- Photokinetic experiments such as FRET and FRAP
- Easy to use software to design complex experiments and develop assays



Image acquisition during mitosis including DIC reference images, multi-channel imaging and laser-based photoactivation. Image courtesy of Cold Spring Harbor Labs, Cold Spring Harbor, NY.

**Q: What applications can benefit with the DeltaVision Imaging System over conventional methods?**

A: A wide variety of applications can benefit from the DeltaVision:

- Any fixed or live cell analysis that requires the flexibility of different fluorophores
- Intracellular measurements, such as vesicle transport
- Small organisms like yeast, bacteria and viruses
- Samples with dim signals or rare events, such as mitosis
- Samples with single layered cells or thin samples typically less than 35 um

**Q: What does it mean to be an “optimized and integrated” system?**

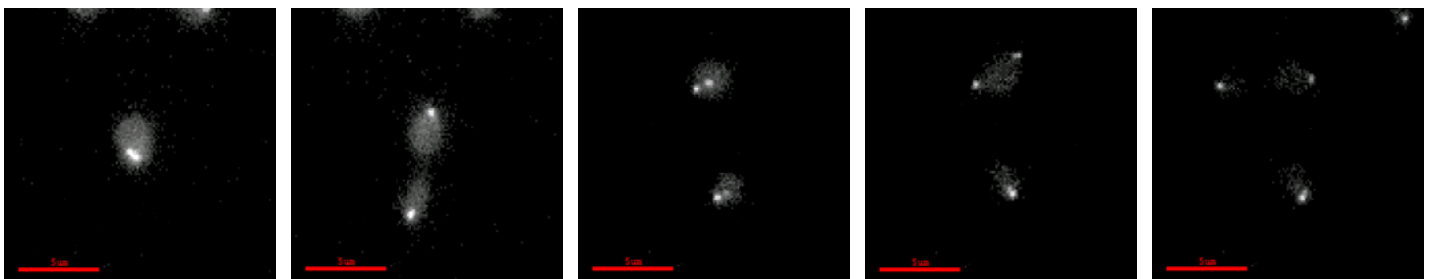
A: All the DeltaVision hardware and software components are optimized to maximize light delivery and acquisition, assembled into the final system configuration and tested in-house. The integrated system is then packaged and shipped to the customer. Our applications scientists can install a system in as little as four hours enabling users to collect data that same day!

**Q: What kind of software does the DeltaVision Imaging System use?**

A: The DeltaVision softWoRx software is a user friendly, intuitive and comprehensive package for acquisition, processing, analyses and data management. In addition, softWoRx Suite adds powerful 3D tools for visualization and analysis. Our software engineers incorporate user feedback and feature requests to continually expand functionality and increase ease of use. Complex experiments can be quickly designed and saved for future use in the Experiment Designer Window. Files are saved as the experiment progresses to ensure no loss of data.

**Q: How long has Applied Precision provided imaging solutions? Are there publications?**

A: Applied Precision was founded in 1986. Since entering the imaging field in 1993 DeltaVision images and data have been published in over 2100 peer-reviewed journal articles.



Images of yeast cell mitosis study. Over 18,000 images were acquired during a 4.5 hour time-lapse experiment. Autofocus is critical for long time-lapse experiments. Images courtesy of Jason Swedlow, Wellcome Trust Biocentre, Dundee.