



Cell Viability



4Deep *inwater imaging*
Holographic microscopes. Deeper insights.

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Cell Viability



Cell viability information, a measure of whether a cell is living or dead, is extremely useful for scientists. 4Deep's technology allows researchers to identify cell viability, using quantitative phase imaging, as living cells display a higher phase shift than the phase shift of the same dead cells.

Benefits

Offers more functionality outside of viability, including morphological identification

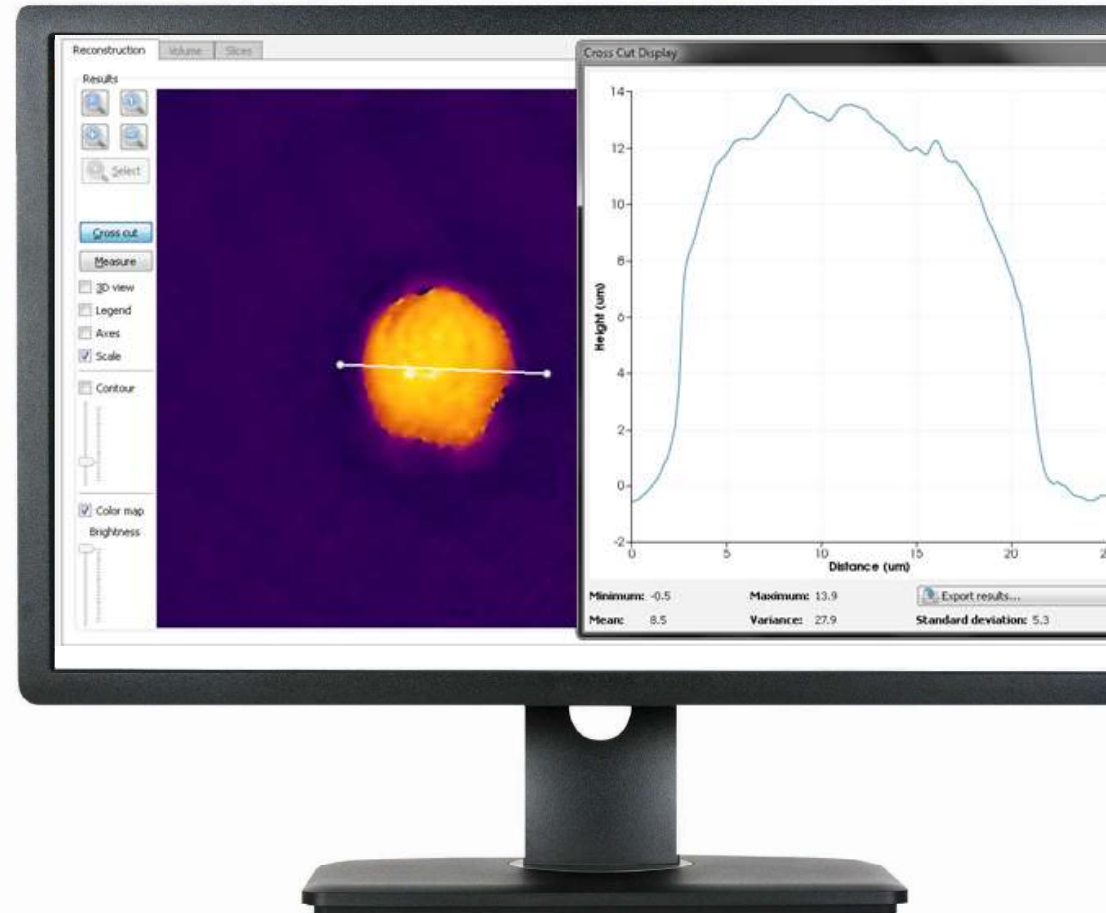
Label-free counting and analysis

Digital focus allows the user to focus on objects in any plane with no moving parts

No time is needed dye the sample

No undesirable effects such as cell bleaching

Saved holograms allow for re-analysis of data as often as required



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Submersible Microscope

The Submersible can simply be deployed in a test tank or in the field.



Desktop Microscope

The Desktop is ideal in laboratory settings and has a minimal space requirement.

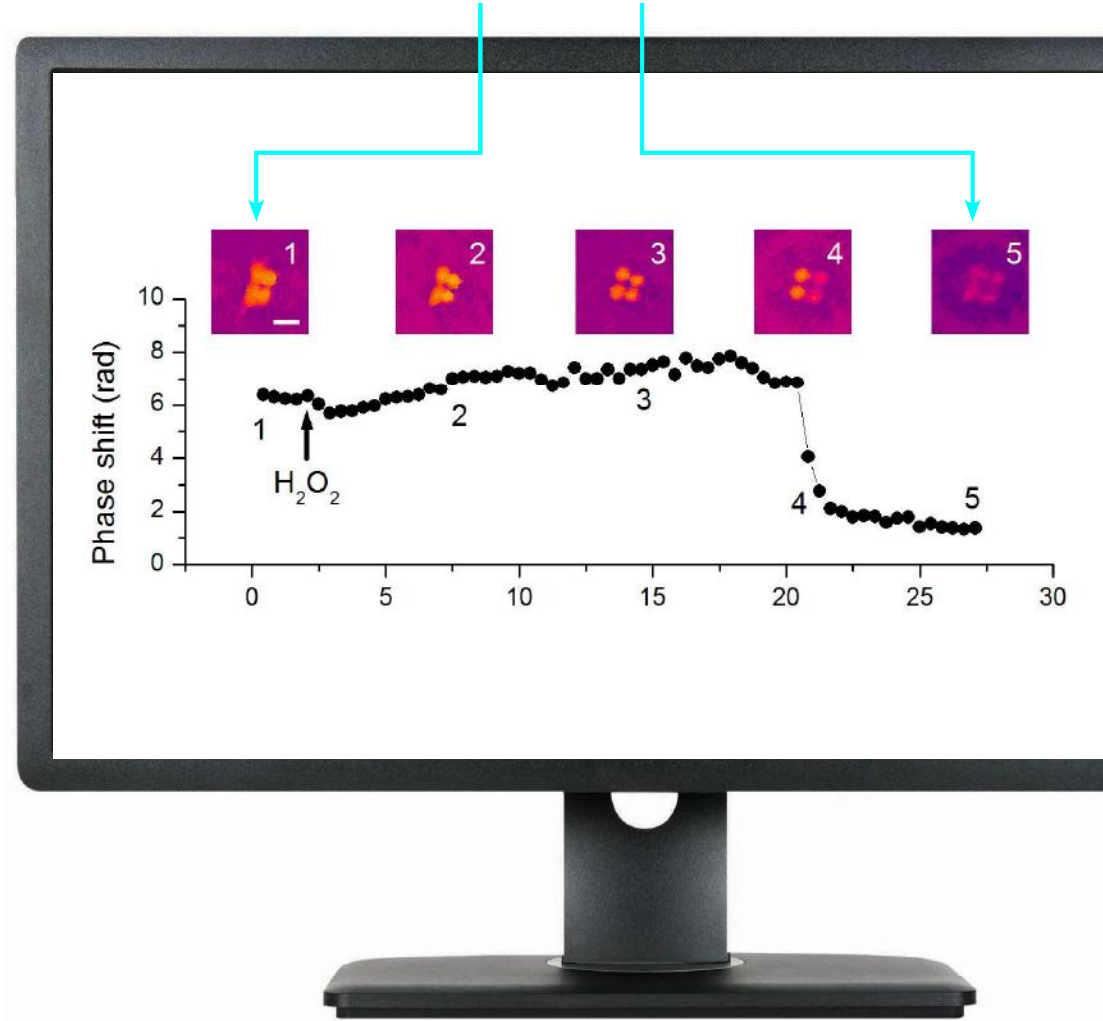
Octopus Software

Octopus captures and saves holograms, which allows the user to analyze the data as many times as necessary.

Using Quantitative Phase Imaging on objects, in Octopus, users can determine whether a cell is viable or not.



Phase information of the same cells over time, after adding hydrogen peroxide to the cell. Notice the significant change in the phase shift from the cells in 1 to the cells in 5



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Cell Culture

Cell viability information from cell cultures is an absolute necessity to determine how certain chemical agents affect the cells; in particular, if a cell is still viable after being exposed to a chemical. Passaging of cells is another important application, as usually, the analysis provides qualitative and not quantitative data. In combination with morphological analysis, scientists can determine not only when cells are viable, but also if foreign cells, such as bacteria or fungus, has been accidentally introduced to the culture. 4Deep's system, with no dyes or incubation period, allows researchers to identify and quantify cell viability without any secondary procedure, which may itself cause cell death.

Water Quality

Knowing whether cells are viable in potable water is essential for ensuring that water samples adhere to water quality standards. 4Deep's Submersible microscope allows the user to directly monitor water supplies and quickly perform Quantitative Phase Imaging analysis to determine whether the cells present are viable.

Food and Beverage

Cell viability data is essential in the Food & Beverage industry, as the presence of certain viable cells can be detrimental to consumers. In the wine-making industry, viability information for yeast cells is key, as the wine makers must ensure that certain species of yeast are no longer viable, as they could re-activate and ruin the wine.

Lipid Analysis

As the need for new energy resources grows, the viability of Biofuels as an alternative energy source is gaining traction. 4Deep offers scientists a novel approach to lipid analysis in viable algae. Using phase information, the viability of cells considered for use in biofuels can be quantified and assessed.

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