

*Imagine • Explore • Discover*



# Live-cell Imaging Applications

See biology in real time



Learn more at [axionbio.com](https://axionbio.com)

# Biology, like you've never seen before

Live-cell imaging captures dynamic, time-dependent cellular processes capable of adding new dimensions to your research. At Axion BioSystems, we offer innovative tools to expand the capabilities of your lab and accelerate discovery and therapeutic development. See how we are advancing research with our live-cell imaging platforms.



**350+ systems  
sold**



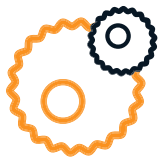
**200,000+ Omni  
scans**



**300+ peer-  
reviewed papers**

## Why live-cell imaging?

Live-cell imaging has revolutionized cell biology research, offering distinct advantages compared to traditional endpoint assays and other conventional cell analysis methods.



### Complete, real-time datasets

Measure kinetics and gather insights that endpoint assays miss



### Physiologically relevant assays

Assay living cells in optimal conditions with environmental control



### Experimental flexibility

Record from nearly any culture vessel, multiplex readouts, and adapt workflows



### No complicated steps

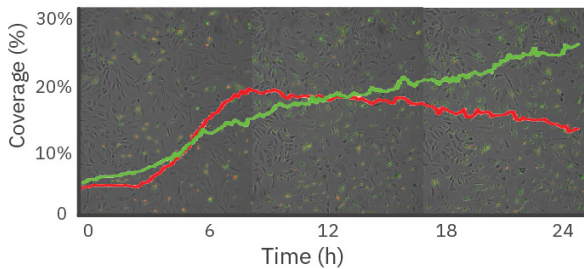
Reduce hands-on time and save money with a simple assay

# Dynamic, real-time cellular processes >>

Endpoint assays



Live-cell imaging

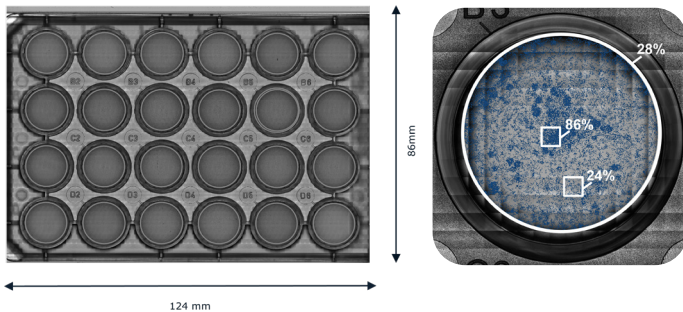


## Biologically relevant results

Biology changes over time. Capture the entire process in real time and never miss a critical event during your experiments.

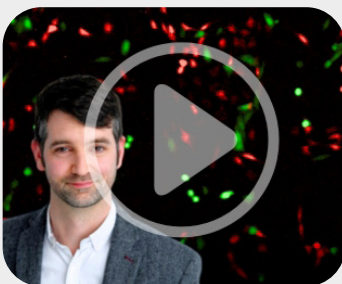
In this example, early and late apoptosis are simultaneously tracked with pSIVA (green) and propidium iodide (red). Real-time data reveals the dynamic interplay throughout the experiment.

# Across the entire well >>



## Fast, AI-driven analysis

With fast, whole-well brightfield imaging capabilities, reduce variability by removing sampling bias. Create high resolution, full-vessel scans compatible with a wide array of culture formats.



## Optimizing CAR structures to enhance efficacy in solid tumours

Learn how researchers used real-time assays on the Omni Pro 12 to evaluate potency and optimize CAR structures. [Watch more](#)



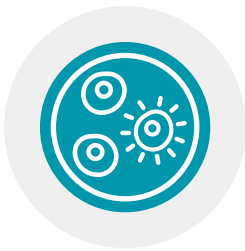
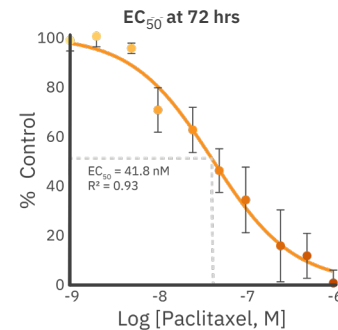
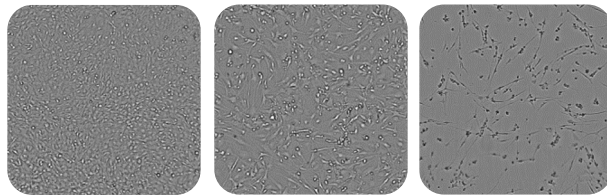
# Easy, fast analysis with intuitive software >>

Our software modules provide the tools for fast, accurate analysis and the flexibility to customize the platform to suit your research needs. Monitor growth and death in monolayers, colonies, or organoids with whole-well brightfield imaging, or multiplex with fluorescence assays to examine specific mechanisms or markers. The examples below highlight some of the capabilities of the Omni platform.



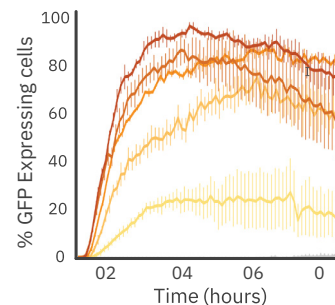
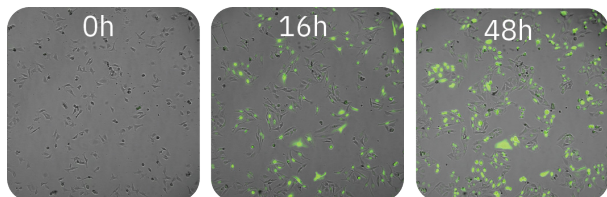
## Confluency Module: Whole-well growth and cytotoxicity

Changes in confluence can indicate alterations in cell proliferation, migration, or death. Assess the health and viability across the entire plate in real time. In this example, real-time cytotoxicity was evaluated in monolayers with an anticancer agent. [Read more](#)



## Fluorescence Module: Versatile assays

Red and green fluorescence channels add compatibility with a wide range of assays. Multiplex your experiments with live-cell compatible labels or with one of many traditional endpoint assays. In this example, GFP was used to optimize transduction protocols using BacMam. [Read more](#)



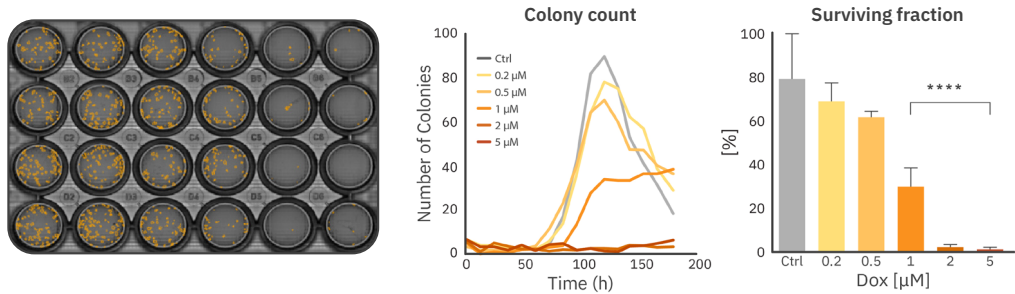
# Kinetic live-cell cancer assays >>

Monitor the survival, growth, and mobility of cancer cells over time for deep insights into cellular behavior and therapeutic response. The Clonogenic Assay Module and Scratch Assay Module streamline the analysis of these common oncology assays to advance our knowledge of cancer biology and facilitate the development of more effective anticancer strategies.



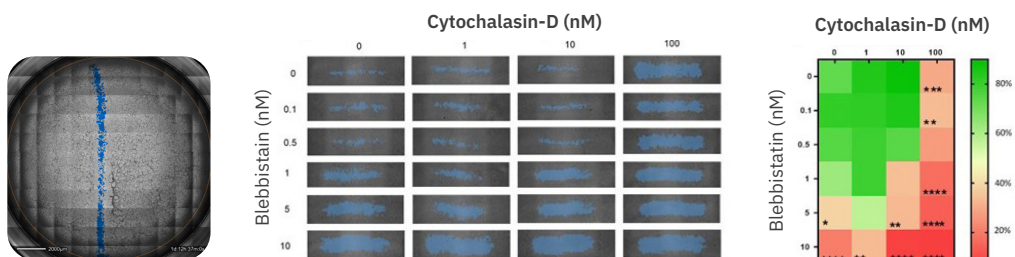
## Clonogenic Assay Module: Fast, accurate colony counts

For accurate counting in low-density clonogenic assays, automated whole-well imaging is critical. Clonogenic assays have a strong time-dependence as colonies grow and merge over time. Real-time imaging ensures your analysis can be done at the optimal time. In this example, cancer cells were dosed with increasing concentrations of an anticancer agent. Colonies were quantified automatically across the entire plate over 170 hours to calculate the dose response. [Read more](#)



## Scratch Assay Module: Dynamic cell migration

Cell migration and wound healing are dynamic processes that can't be captured in a single endpoint. A scratch assay tracks the closure of a controlled gap in a confluent cell culture and is common in oncological and regenerative medicine research. In this example, blebbistatin and cytochalasin-D alter cell motility and inhibit gap closure. By quantifying the entire scratch area, variability introduced by manual scratch placement can be minimized. [Read more](#)



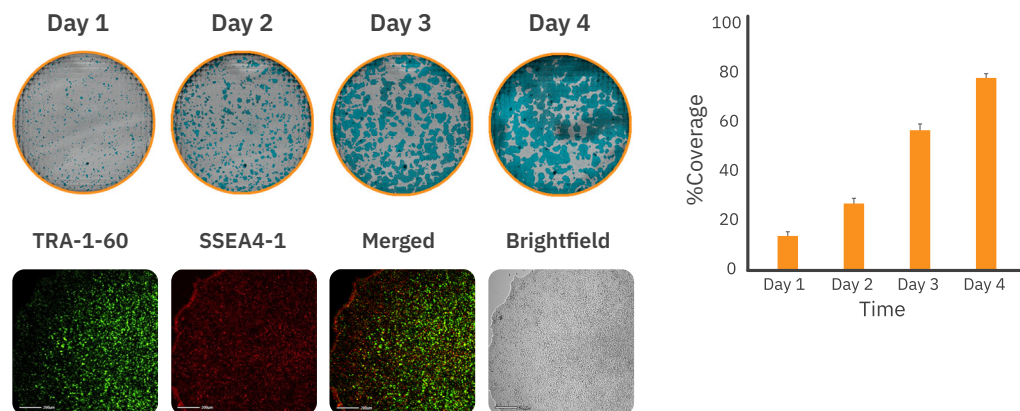
# Culture quality monitoring >>

A consistent differentiated cell begins with consistent starting material. Noninvasively track cellular processes crucial to development and differentiation. Improve your process with real-time visualization and continuous monitoring of stem cell behavior, organoid formation, and response to environmental cues.



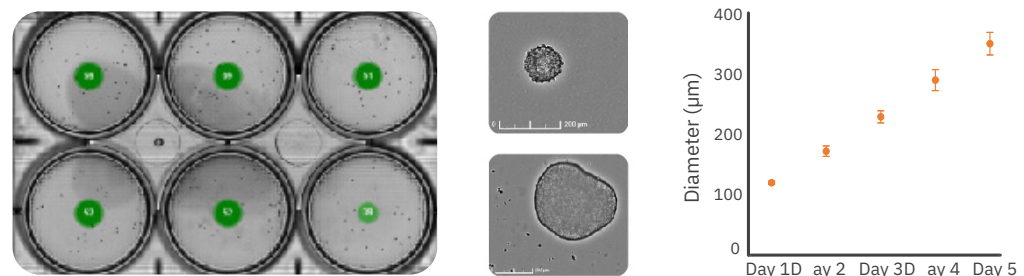
## *iPSC Module: Monitor growth and quality*

Track the growth of your pluripotent stem cell cultures label-free to ensure you always passage at the right time. Coverage of stem cell colonies was monitored so cells could be passaged when they reached 70%. Pluripotent markers were confirmed at day 4 through fluorescent staining using the Fluorescent Module. [Read more](#)



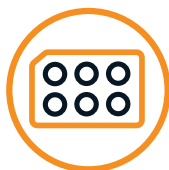
## *Organoid Analysis Module: Track formation and growth*

The quantity, size, and roundness of embryoid bodies (EBs) were tracked to ensure normal, consistent formation and growth. Normal handling and maintenance often moves EBs, organoids, and spheroids in the dish, making single-site imaging unsuitable for this purpose. [Read more](#)



# Live-cell imaging from your incubator >>

Whole-well brightfield or fluorescence imaging with single or multiplate options and a range of easy-to-use software modules lets you customize your analysis.



**Whole-plate imaging**



**Incubator-based design**



**Flexible workflows**



Features	Lux	Omni Pro 12	Omni
Imaging Type	Brightfield and Fluorescence fixed position	Whole vessel brightfield/ Pattern fluorescence	Whole vessel brightfield/ Pattern fluorescence
Incubator Compatible	✓	>160 L	✓
Fluorescence	Gr: Ex 452/45 nm, Em 512/23 nm Re: Ex 549/15 nm Em 630/90 nm	Gr: Ex 452/45 nm, Em 512/23 nm Re: Ex 549/15 nm Em 630/90 nm	Gr: Ex 452/45 nm, Em 512/23 nm Re: Ex 549/15 nm Em 630/90 nm
Plate Handling	Manual	Automated	Manual
Number of Plates	1	12	1
Vessel types	All vessel types	Well plates	All vessel types
Dimensions & Weight	166 x 140 x 135 mm 6.5" x 5.5" x 5.3" L x W x H	460 x 417 x 439 mm 18.1" x 16.4" x 17.3" L x W x H	396 x 345 x 171 mm 15.6" x 13.6" x 6.7" L x W x H



**Want to learn more?**  
Click the figures in the digital version for additional resources and an in-depth look.



## Our commitment to our customers

With over 15 years of experience bringing innovative new products to our customers, we strive to accelerate your research by making live, functional biology more accessible. Our design philosophy is to ensure all of our products are:



### Flexible

Hardware designed for broad, integrated functionality in one instrument



### Easy to use

Intuitive instruments, consumables, and software for fast, easy adoption



### Smart technology

Easy to run with no complicated steps, save time and money.

Contact our scientists to discuss how we can help your research with live-cell imaging:  
[axionbiosystems.com/contact](https://axionbiosystems.com/contact)