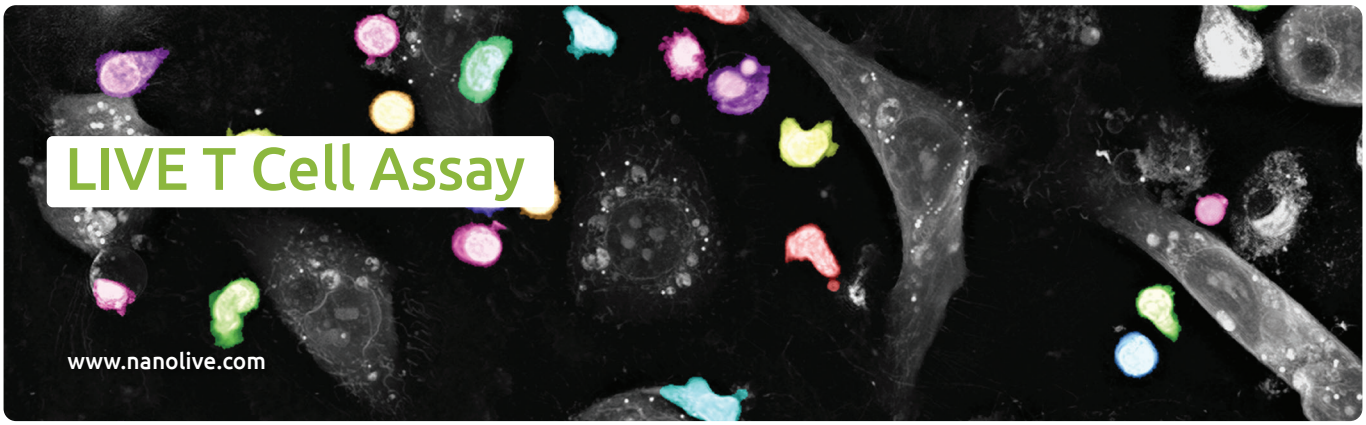
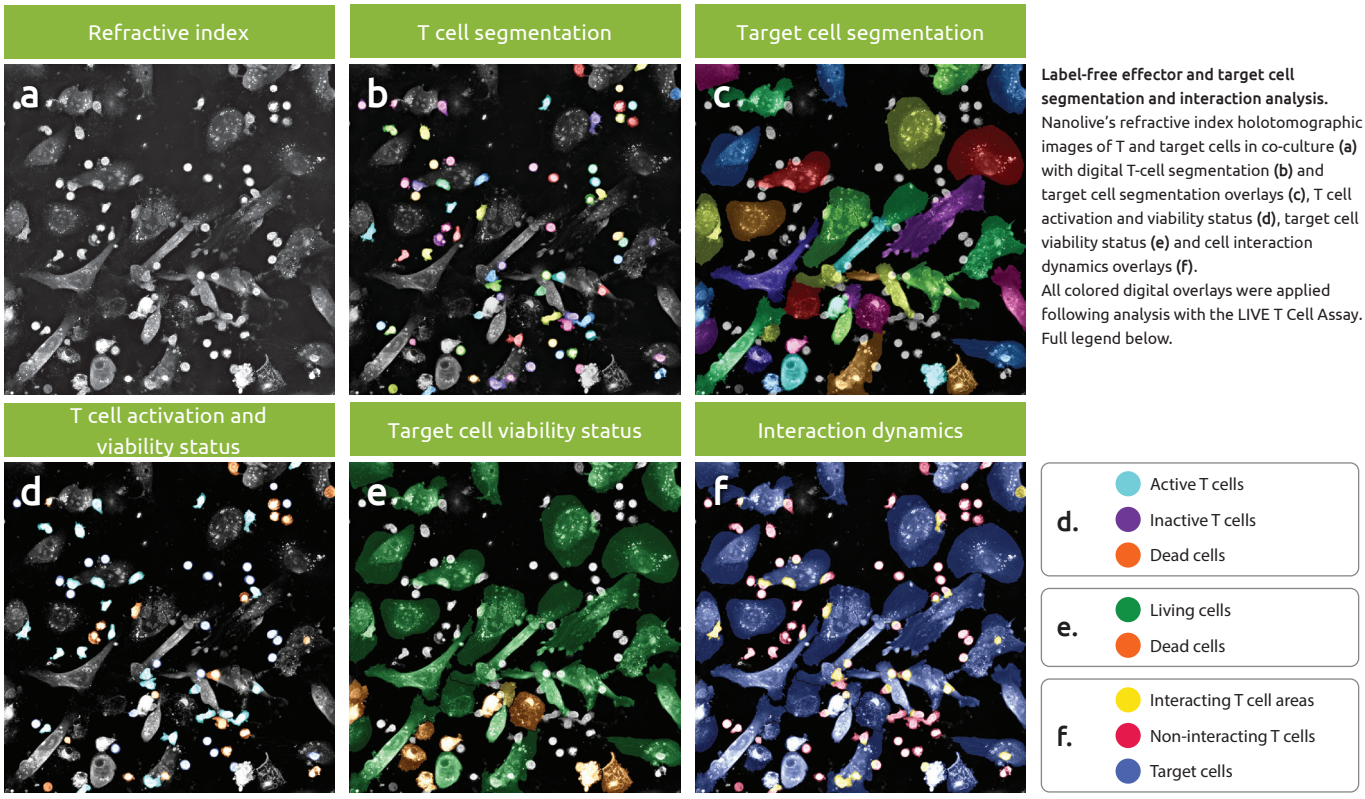
LIVE T CELL ASSAY



The LIVE T Cell Assay combines label-free live-cell imaging and AI-powered analysis to deliver continuous, multiparametric data - capturing dynamic immune interactions, cell activation, viability and killing efficiency without fluorescence.

- **Label-free, non-invasive imaging**
- **Hands-off, one-click analysis**
- **Label-free segmentation for co-cultures of effector cells and solid or liquid tumor cells**
- **Quantify T cell activity and target cell death, label-free**
- **Optional correlative fluorescence features for functional analysis**

Comprehensive, dynamic & multi-parametric T cell:target cell interaction metrics



Label-free effector and target cell segmentation and interaction analysis. Nanolive's refractive index holotomographic images of T and target cells in co-culture **(a)** with digital T-cell segmentation **(b)** and target cell segmentation overlays **(c)**, T cell activation and viability status **(d)**, target cell viability status **(e)** and cell interaction dynamics overlays **(f)**.
All colored digital overlays were applied following analysis with the LIVE T Cell Assay. Full legend below.

The LIVE T Cell Assay is an advanced digital tool that uses refractive index-based imaging for precise, label-free segmentation and classification of target and effector cells in co-culture. Offering high spatio-temporal resolution, automated analysis, and unbiased insights, it accelerates the discovery of CAR-T, TCR-T, bispecific antibodies, and other immunomodulators.

Digital overlays enable automated data extraction on effector activation, target viability, and interaction dynamics, providing deep functional insights to optimize lead selection, assess potency, and enhance workflow efficiency in immuno-oncology and cell therapy research.

Images to insights simplified: EVE Explorer

Our integrated analysis interface for high-content live cell imaging data allows for quantification of cellular and organelle responses with an intuitive automated workflow, customizable plotting options, and seamless data management, enabling researchers to make data-driven decisions and focus on discovery.

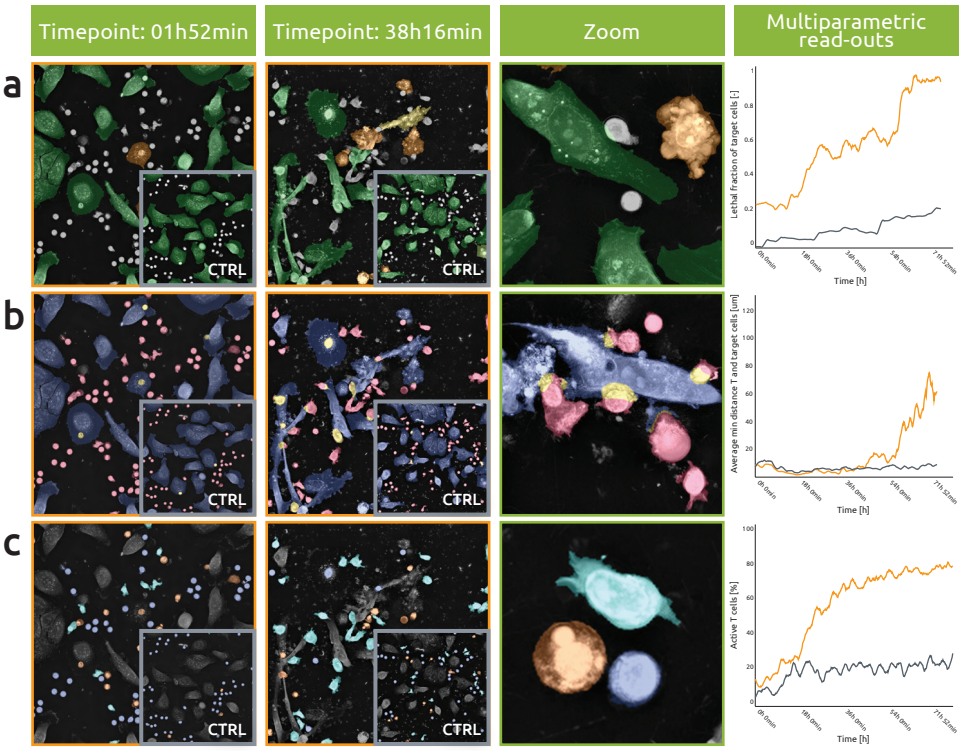


Advanced effector and target cell analysis for accelerating drug development

The LIVE T Cell Assay automatically extracts insights into target and effector cell viability, interactions, and T cell activation:

- Measure T cell killing in real time with automated, label-free quantification of target and T cell viability
- Quantify T and target cell interactions to assess immunomodulator efficacy and optimize lead candidate selection
- Measure T cell activation status label-free and at every time point to assess persistence and efficacy of cell therapies

Additionally, optional fluorescence imaging can expand insights for T cell research. With EVE Explorer Pro, automated analysis enables users to effectively separate morphologically similar effector and target cell populations.



T cells and target cells treated with a bispecific antibody **(orange)** and negative control **(grey)** were imaged with Nanolive's holotomography and analyzed with the **LIVE T Cell Assay** for multiparametric results.
Digital segmentation of live **(green)** and dead **(orange)** target cells at different timepoints allows for quantification of lethal fraction over time **(a)**. Additionally, target cells **(blue)**, T cells **(red)** and their interaction points **(yellow)** can be digitally segmented for unique interaction metrics including the average minimum distance between T cells and target cells [um] against time **(b)**. Finally, AI-predicted T cell activation status, including active T cells **(cyan)**, inactive T cells **(purple)**, and dead T cells **(orange)** can be shown through digital segmentation and quantified; here active cells [%] (per fov) against time **(c)**.

Applications of the LIVE T Cell Assay

Immuno-oncology drug screening

Assess the efficacy of T cell-based therapies, immune checkpoint inhibitors, and combination treatments

CAR-T & TCR therapy development

Optimize CAR-T and TCR engineering by assessing activation kinetics, target engagement and cytotoxicity

Monitor T cell activity

Use label-free, AI-predicted T cell activation status to evaluate effector persistence or exhaustion over time

Antibody-Dependent Cell-Mediated Cytotoxicity (ADCC) research

Assess the potency of therapeutic antibodies by quantifying their ability to enhance immune-mediated killing of target cells

Nanolive SA
Lake Geneva Park | Route de Lully 5B | 1131 Tolochenaz | Switzerland
www.nanolive.com | +41 21 353 0600 | lookinginsidelife@nanolive.ch