

# SINGLE PHOTON COUNTING & IMAGING

# LINCam

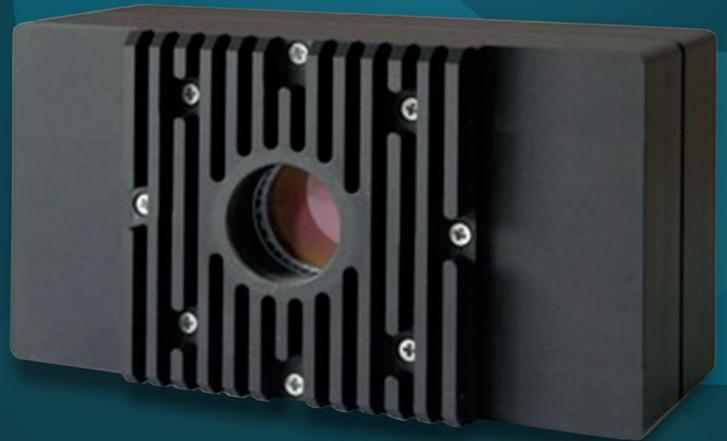
**Extreme fast optical camera with picosecond resolution for lifetime imaging**

The LINCam is a scanning free and easy to use camera that can detect photons on the picosecond time scale. Live imaging and time of arrival is given over the whole range of view. Being paired with a pulsed light source, the LINCam can turn any conventional microscope into a powerful lifetime imager.

As the LINCam measures over a larger area and has a high QE (30%), lower photon fluxes on the sample are necessary, preventing sample degradation. The high readout speed (1MHz) on the cathodes facilitates taking quality lifetime images in tens of seconds instead of hours (optional).

**Photonscore.** *\*In collaboration with Photonscore.*

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## Key Features

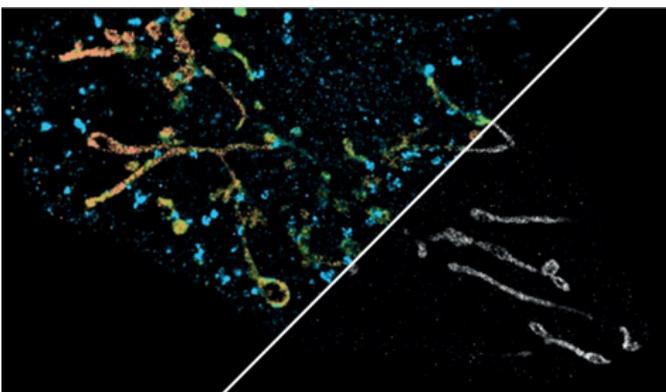
- ◆ Fast Time Resolution
- ◆ Broad Spectral Range
- ◆ Fast Read Out Speed
- ◆ Live View Functionality
- ◆ High Spatial Resolution
- ◆ Intuitive to Use Software

## Applications

- ◆ (3D) Light sheet FLIM & FRET
- ◆ Metabolic & NADH imaging
- ◆ Single Molecule Imaging
- ◆ Time resolved Raman spectroscopy
- ◆ Quantum Optics

**Contact us for expert advice on your application**

## Single Molecule Imaging

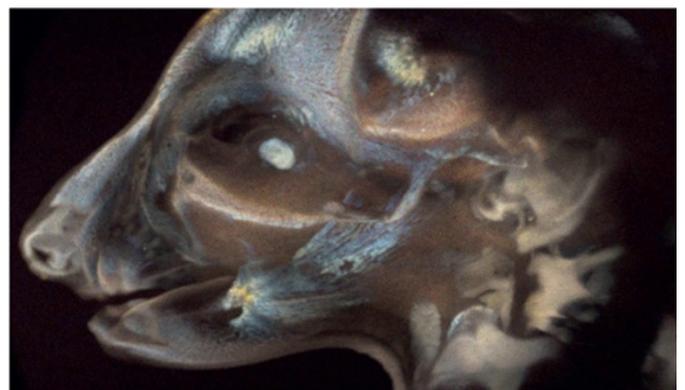


Different types of single molecules are often spectrally unresolvable. However, they can be characterized and separated by their corresponding fluorescence lifetimes. With LINCam, it is possible to create a contrast between different single molecule emitters with an accuracy of <math><200\text{ps}</math> in high-resolution widefield lifetime images.

## Widefield / Light Sheet FLIM

In widefield fluorescence microscopy (FLIM) the whole field of view is illuminated simultaneously, in contrast to confocal imaging.

Widefield FLIM enables fast detection of fluorophores under low light conditions with high temporal resolution. Using LINCam you can analyze complex fluorescence decays and generate high quality FLIM images and movies of living samples.



## LINCam Specifications

### Detector Specifications

Active Area Diameter	17mm
Positional Resolution	20µm
Temporal Resolution	17 ps $\sigma$ -Gaussian
Deadtime	400ns
Dark Noise	5-10 hz
Maximal Counts	1 MHz
Microscope Mount	C-Mount
Reference Input	Positive or Negative NIM
Computer Interface	USB 3.0 / Ethernet
Operating System	Microsoft Windows 7/10/11 (64bit)

### Cathode Specifications

Input Window	Quartz, Glass, MgF2
Photocathode	UV, Green, Red (other types available upon request)

## LINCam Overview

The LINCam is a product from Photonscore, a spin off from the Leibniz Institute for Neurobiology. The LINCam is made possible by Exosens, who produces the heart of the detector: the Microchannel Plate based Photomultiplier Tube (MCP-PMT).

## Working Principle

A photon hitting the photocathode can release an electron, the electron is accelerated to the MCP stack where the electron is multiplied to an electron avalanche, which then hits the anode structure. This anode structure gives spatial information by center of mass determination.

### Lifetime Estimator

Choose between mean and median estimation

### Pipette

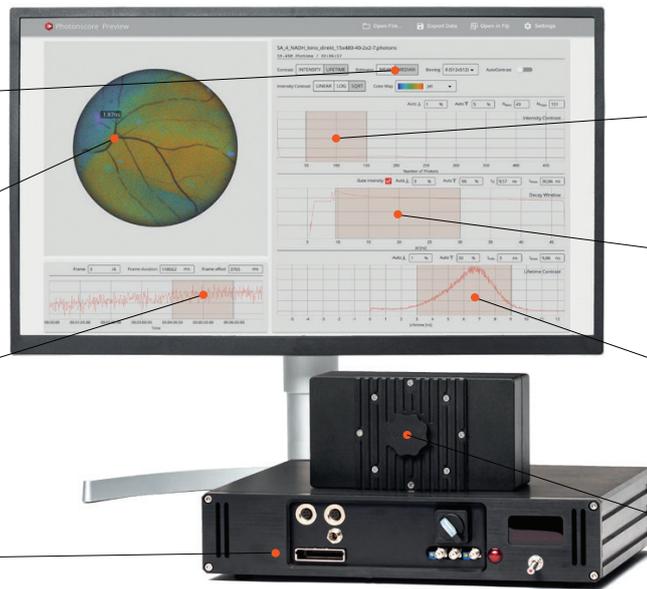
Know the lifetime of any given position of the image

### Timeline

Select your image frames independently from a scanner

### Electronic Module

Connect the electronics to your computer and start your FLIM measurement



### Intensity Contrast

Tune your image for best brightness and visibility

### Decay Selector

Select the decay you want to observe and remove reflexes by gating the utilized photons

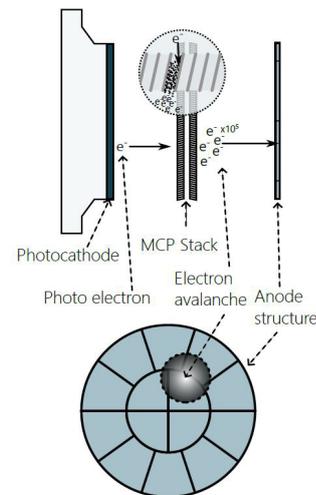
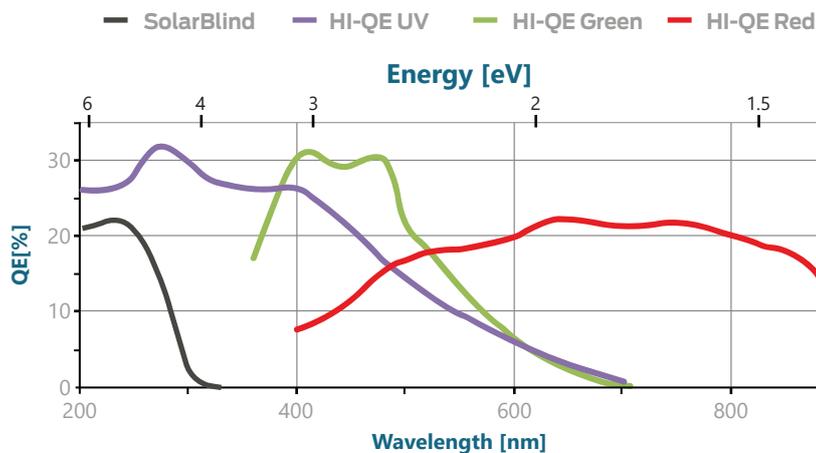
### Intensity Contrast

Tune your image for best brightness and visibility

### Detector Head

Attach the detector to any C-Mount port at your existing microscope setup

## Photocathode Overview



To Learn More About LINCam



[www.photonscore.de](http://www.photonscore.de)

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[exosens.com](http://exosens.com)



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