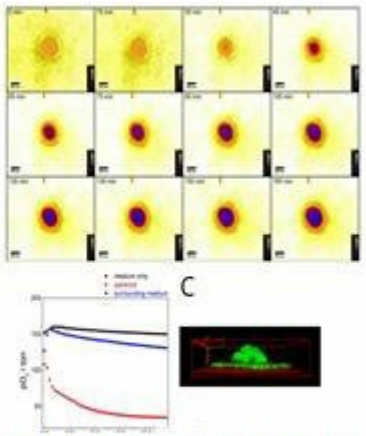
PreSens
PRECISION SENSING

How Much Oxygen is inside Your Tissue Sample?

New Live Plugins



Dear Dr. Max Mustermann

Are you interested in the present status of the microenvironment of your 2D or 3D cultured cells? The modular VisiSens TD imaging system enables visualizing and analyzing the oxygenation or acidification of the microenvironment of your 2D cells and even measure cross-sections of spheroids or artificial tissue during culture. The new software, including the live plugins, will assist your here in the best possible way. Besides the essential product information this newsletter also invites you to read some of our matching application examples.

Any questions to your set-up? Contact your expert Dr. Robert Meier!

Your PreSens Team

Product Information:

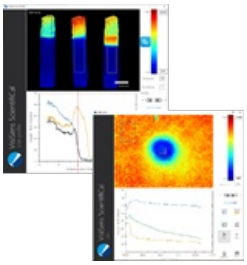
VisiSens TD - The Modular System for O_2, pH and CO_2 Mapping

The VisiSens TD is a modular imaging sytem that can read out up to three analytes in one system. Planar sensors are placed on the sample area or in different cavities and the fluorescent sensor signals are read out pixel by pixel with a camera. Choose the options that you need for your experiment:

- multiple sensor types combinable in one field of view
- variable sensor and measurement geometry
- 12-bit detector
- adaptable field of view, microscopic, 4 x 4 cm² or up to 30 x 25 cm²
- time-lapse slide shows or recordings

>> Learn more about the measurement principle of our imaging technology, methods to control and investigate concentration gradients or inhomogeneity, as well as possible set-ups, according to your application.

VisiSens ScientifiCal and VisiSens Plugins



The new VisiSens ScientifiCal software contains a starter pack with several evaluation plugins ranging from

- simple live 2D pseudocolor representation with statistics,
- to live multi ROI (region of interest) evaluation with plotting,
- to live multi gradient profiling,
- as well as a video creator and a raw extractor for further processing of the data in other software.

>> HOW2 ... Use the Live Plot Plugin for VisiSens ScientifiCal (video link):
Compare different regions of interest (e. g. inner, peripheral and media)
>> HOW2 ... Use the Live Profile Plugin for VisiSens ScientifiCal (video link):
Gradients over 3D cell culture, spheroids, etc.

Accessories to the ViSiSens TD

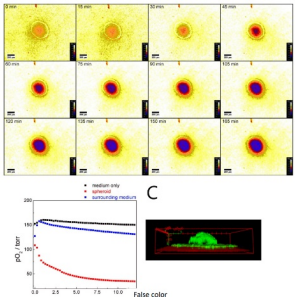
- VisiSens TD Big Area Imaging Kit:
Enables large area imaging & includes excitation lights for O_2, pH and CO_2 imaging
- VisiSens TD MIC Kit:
Optics and an excitation light source to adapt the VisiSens TD Basic System for microscopic oxygen imaging
- VisiSens TD Mounting Rack:
Secure mounting of VisiSens TD Big Area Imaging Kit & quick-lock levers for fast modification of the set-up
- Imaging Sensor Plate Adapter Tubus:
Specifically designed for ISP24 and ISP96 imaging sensor plates due to easy attachement to VisiSens TD Basic Set

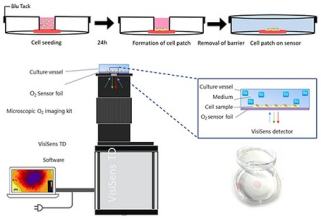
Application Examples:

Imaging of Oxygen Gradients in Cell Aggregates

Spatial and temporal monitoring of oxygen levels and gradients in the microenvironment of adherent mammalian cell culture (2D cell monolayers, MCF-7 spheroids and cell seeded scaffolds as 3D tissue models) in a non-invasive way.

>> Read more ...





Spatio-temporal O_2 Gradients in the Microenvironment of an Outgrowing Cell Patch

Oxygen Imaging in Micro-Scale with the VisiSens TD MIC System

Cell-based assays have emerged to an indispensable tool in all areas of the biomedical sciences. However, cell culture experiments in a laboratory environment are always questioned for their physiological relevance in general and their compliance with the physiological microenvironment in particular. Oxygenation for example is not routinely controlled in 2D cell culture experiments, although hypoxia, i.e. O_2 values lower than air saturation, is common to many types of tissue in the animal body. Most cell culture is performed, however, under 'standard conditions' (95 % air, 5 % CO_2 , 37 ºC) so that oxygen levels in the cell culture fluid are non physiological. Static cell cultures build up a cell-type dependent microenvironment, which is the result of cellular respiration, proliferation and the finite diffusion rates in static media. It was the aim of this study to measure the local O_2 concentration in the microenvironment of adherent cell patches that are allowed to proliferate and migrate.

>> Read the entire application note ...

You would like to learn even more about PreSens Precision Sensing? Please visit our homepage www.presens.de and don't hesitate to contact us. Any feedback will be appreciated.

With kind regards

Christina Schlauderer
Communications

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