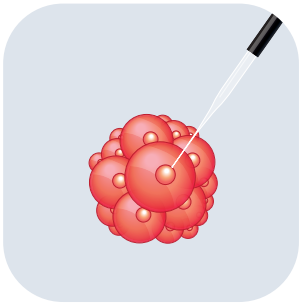
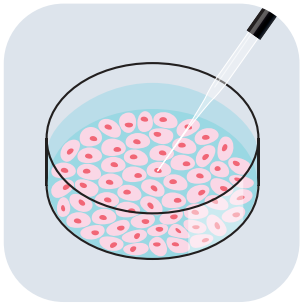
UNISENSE


Study the Tumor Microenvironment

Real-time monitoring of hypoxia and pH in tissue and cell cultures

O_2 pH

- Intratumoral pO_2 and pH
- Small volume measurements
- O_2 and pH gradients inside 3D spheroids
- High sensitivity microsensors (detection limits < 50nM)
- Oxygen consumption rates (OCR) of live cells
- Non-destructive measurements

Take advantage of sensor tips with diameters less than 10 µm and complete non-destructive and real-time measurements directly in tumors and tissues. Regardless of whether you would like to characterize the hypoxic and acidic tumor microenvironment in vivo, measure chemical gradients inside 3D tumor spheroids, measure oxygen consumption rates (OCR) of cell cultures, monitor oxygen availability, or make small volume measurements, the Unisense microsensor technology will provide you with an accurate, highly sensitive, and reliable research tool.

Using the Unisense MicroProfiling System you can position the sensor in your sample with extreme accuracy and you can measure chemical gradients with high spatial resolution. The movement of the microsensor can be performed manually operating the micromanipulator by hand, or automatically controlling the motorstage via your PC. The sensor signal is logged using SensorTrace Suite software, a software solution that also allows you to visualize and analyse your obtained data. The MicroProfiling System can be augmented with one or two more degrees of freedom, enabling you to conduct measurements in both two and three dimensions.

Related publications

Zhao et al. Photocatalysis-mediated drug-free sustainable cancer therapy using nanocatalyst, Nature Communications 2021, 12:1345.

Voss et al. Targeting the Acidic Tumor Microenvironment: Unexpected Pro-Neoplastic Effects of Oral NaHCO3 Therapy in Murine Breast Tissue, Cancers 2020, vol. 12,4 891.

Wang et al. Perfluorocarbon regulates the intratumoural environment to enhance hypoxia-based agent efficacy, Nature Communications 2019 10:1580.

Wang et al. Magnesium silicide nanoparticles as a deoxygenation agent for cancer starvation therapy, Nature Nanotechnology 2017, 12, pages 378–386.

Chen et al. Oxygen-Self-Produced Nanoplatform for Relieving Hypoxia and Breaking Resistance to Sonodynamic Treatment of Pancreatic Cancer, ACS Nano 2017, 11, 12849–12862.

Schreiber-Brynzak et al. Behavior of platinum(IV) complexes in models of tumor hypoxia: cytotoxicity, compound distribution and accumulation. Metallomics 2016, 8,422.

Wartenberg et al. Regulation of the multidrug resistance transporter P- glycoprotein in multicellular tumor spheroids by hypoxia- inducible factor-1 and reactive oxygen species. FASEB J. 2003.