Intracellular oxygen levels significantly influence cellular physiology, redox state and metabolism with altered oxygen availability involved in several pathological states, such as cardiovascular diseases, cancer and stroke. The MitoXpress Intra Intracellular Oxygen Assay allows researchers to gather quantitative real-time information on the cellular oxygenation within 2D- and 3D- in vitro models across multiple samples, thus providing access to a critical parameter in the study of hypoxia which is beyond the capacity of extracellular sensing methodologies.

Using MitoXpress Intra you can easily:

- Determine the oxygen concentration that your cells are actually experiencing in culture
- Investigate the interplay between cellular oxygenation & metabolism
- Determine cellular oxygenation under hypoxic conditions and upon drug treatment
- Identify appropriate environmental oxygen concentration when conducting experiments where a defined intracellular oxygen concentration is crucial

Simple "mix-and-measure" protocol allows multiparametric analysis with a range of other kits, for example pH-Xtra Glycolysis Assay and assays for ROS, MMP, and ATP. A major advantage is that the kit is designed for use with time resolved fluorescence plate readers and standard 96- and 384-well microtitre plates!
- NO in lab waiting time for specialised equipment to become available and NO capital expenditure required.

- Quantitative assessment of intracellular oxygen concentration
- Measures transient and rapid changes in cellular oxygenation
- Compatible with 2D and 3D in vitro models
- Oxygen-sensitive cell-penetrating nanoparticle probe
Why measuring your cells response in the correct oxygen concentration is important.

1. The vast majority of in vitro research is conducted at 18-21% O₂. This is hyperoxic for most cell types which typically experience concentrations of between 1-13% in vivo.

2. While physiologically relevant oxygen concentrations can be defined in vitro using hypoxia work stations and plate readers, this does not account for the significant additional hypoxia caused by cellular respiration (Fig. 2).

3. This additional hypoxia is dynamic and is highly dependent on cell number, cell metabolism and culture volume.

4. Intracellular monitoring of cellular oxygenation is therefore critical to properly characterise the many processes which are dependent on cellular oxygenation.

MitoXpress Intra Intracellular Oxygen Assay
Catalogue Number MX-300-4 Kit Component Details

<table>
<thead>
<tr>
<th>Component</th>
<th>Item</th>
<th>Description</th>
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<tr>
<td>MitoXpress Intra reagent</td>
<td>4 Vials</td>
<td>Oxygen-sensitive, cell-penetrating nanoparticle</td>
</tr>
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</table>

REFERENCES
Chapple SJ et al., Free Radical Biology and Medicine, 2016; 92; 152-162

Figure 1. Schematic illustration showing changing oxygen tension in tissues

Figure 2. Monitoring oxygen concentration in samples containing 3D HepG2 cells in response to decreasing atmospheric oxygen conditions. Note the difference between applied and intracellular oxygen.

Figure 3. Cellular oxygenation and the depth of hypoxia experienced by the cells cannot be inferred from ambient oxygen concentration. The difference in oxygenation leads to differences in cellular signalling and phenotypes, as shown here for HIF-1α stabilisation (Hypoxia-responsive element Luciferase reporter gene assay; Data courtesy of Dr. Karl Morton, University of Oxford).