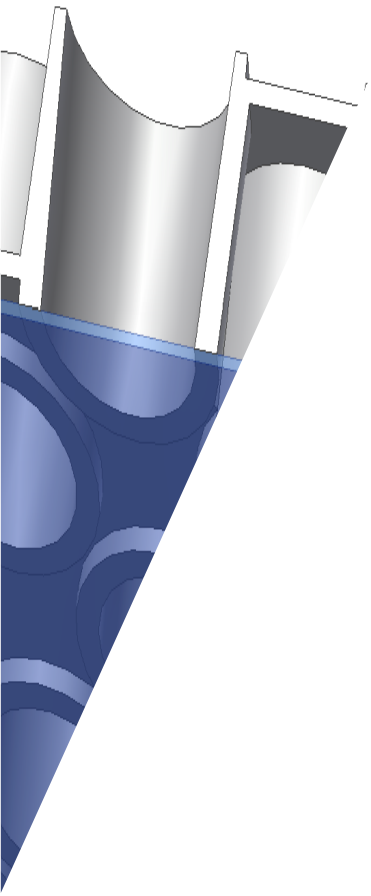
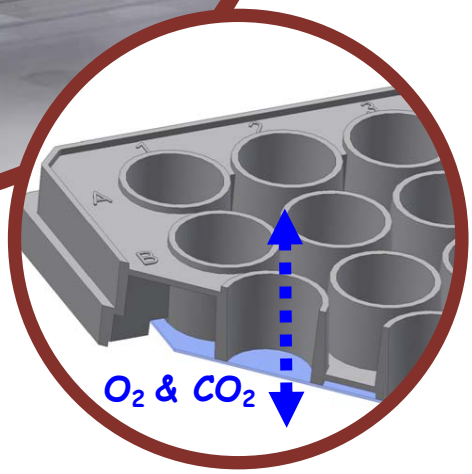
Gas Permeable Plates



Cells Grow on Clear Gas Permeable Well Bottom



- **Biologically Relevant O2 Studies**
  - Normoxia, Hypoxia, & Hyperoxia
  - Metabolically Active Cells
  - Intermittent Hypoxia
- **Advanced Microscopy Techniques**
  - Live Cell Imaging
  - FREP, FRAT, HCA/HCS, & LCM

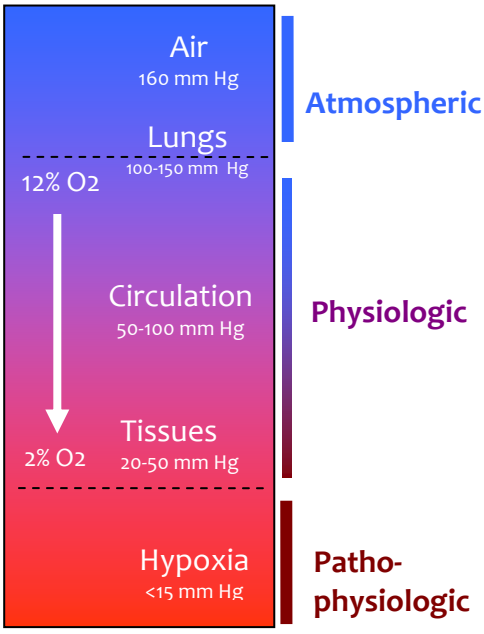
Cells "Experience" Controlled O_2 Levels

It has been shown that culturing cells at 18-21% O_2 (ambient conditions) yields altered phenotypes and gene-expression compared to culturing at physiologic levels[1,2,3]. Additionally, abnormally low O_2 has been shown to be responsible for pathophysiology.

Consequently, the need for cellular studies to be done at biologically relevant pericellular levels of O_2 has become apparent.

Unfortunately pericellular O_2 control with standard plates and incubation techniques is challenging. Gaseous O_2 levels are a poor indicator of pericellular O_2 levels due to the long diffusion times needed to equilibrate media with the gaseous O_2 level coupled with the potential of cellular O_2 consumption exceeding the diffusion[4,5,6,7].

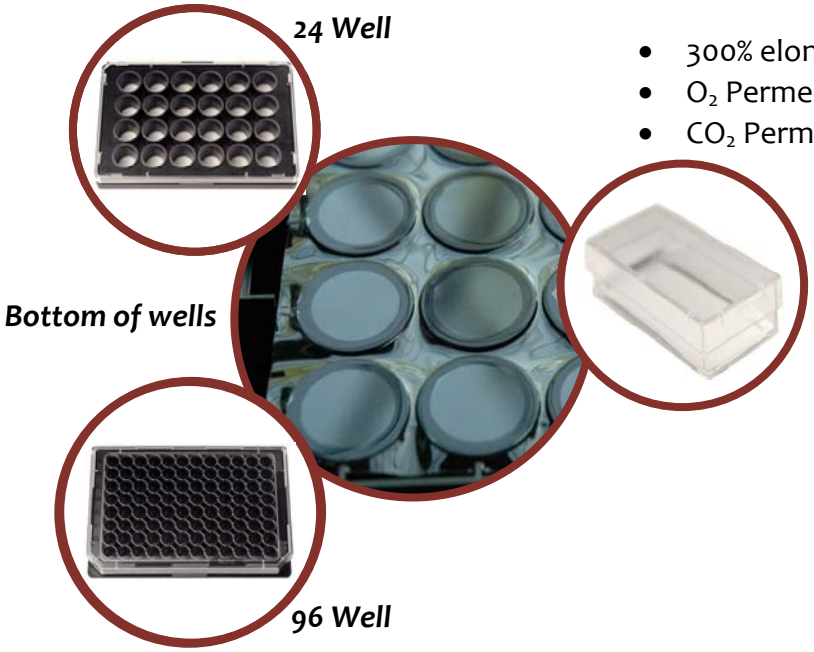
The COY Permeable Plates take advantage of historically proven technology by changing the design of the multi-well plates to enable adherent cell microenvironments to be at controlled physiologic O_2 levels.



InVivo O_2 Levels.
From de Souza (2007)[8]

Gas Permeable Membrane Replaces Bottom of the Wells

Strong 25µm polymer film has high gas transfer rate while retaining liquid



- 300% elongation with blunt objects
- O_2 Permeability > 6300 $cm^3/m^2*d*bar$
- CO_2 Permeability > 7000 $cm^3/m^2*d*bar$

Tissue Culture Surface

- Well-established plasma surface modification includes amination
- Suitable for growing most adherent cells (e.g. HEK U293, HepG2, MCF-7)
- Coating with extra cellular matrix proteins is recommended for some very sensitive cell lines (e.g. PC-12) and some primary cells

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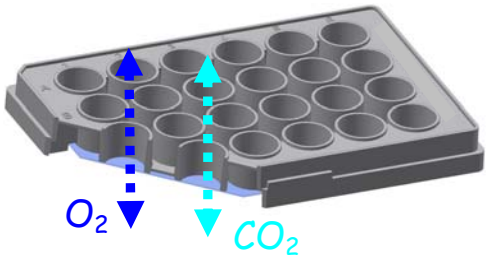
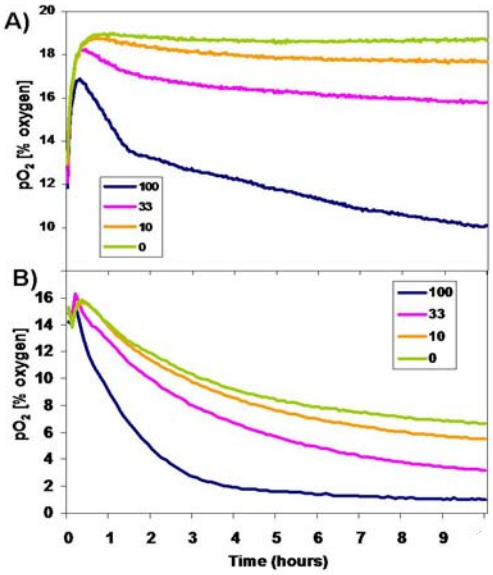
Controlled O2 Levels from your incubator, glove box, or cabinet transfer directly to the microenvironment of the cells growing on the membrane



Ideal for intermittent hypoxia studies where the cell micro-environments must change in response to rapid cycling of gaseous O2 levels

O2 Diffusion Slower than O2 Consumption Cells Experience Non-Desired O2 Levels

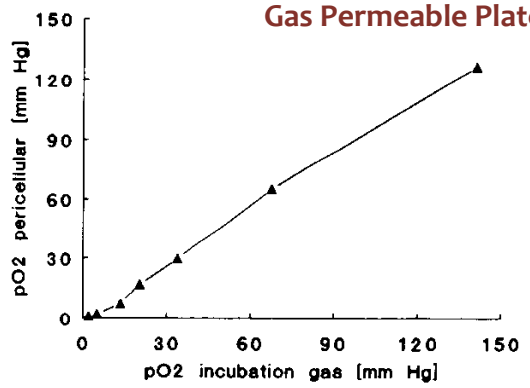
Standard Plates



Average pericellular pO_2 levels of MEF cells plated at differing densities (100,000, 33,000, 10,000 and 0 cells/cm2) and exposed to A) ~19%, and B) 7% ambient pO_2 as controlled by a Coy O_2 Controlled Glove Box. n=3 for each treatment. 1 ml media/well. At both 19% and 7% O_2, diffusion is unable to keep up with the O_2 loss in media due to respiration. From Lynn (2011)[7]

O2 Permeates the Membrane Bottom of Wells Cells Experience the Desired O2 Level

Gas Permeable Plates



Consistency Between pO_2 in Gas and Pericellular O_2 shown in 1993 using analogous plates

Steady-state pericellular pO_2 (measured up to 24h) in confluent Hep G2 cultures in dishes with gas-permeable bottom (0.5ml medium/cm2) vs. pO_2 of incubation gas (n=4). From Wolff (1993)[6]. [data predates existence of Coy Gas Permeable Plates]

Elevated Plate Holder for Solid Shelves

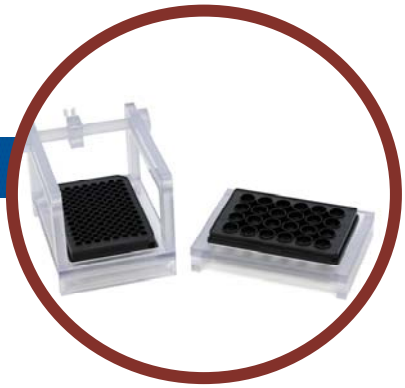


Plate Holder available with and without sensor support

Holder maintains space under plate for optimum gas exchange during:

- Use on non-perforated incubation shelves
- O_2 Cycling for Intermittent Hypoxia studies

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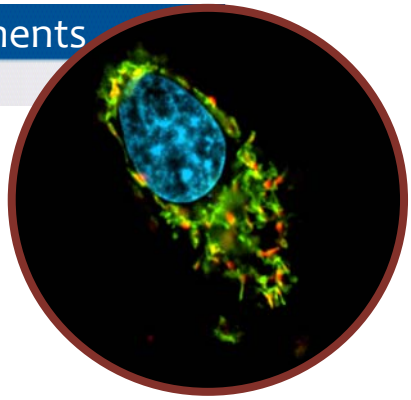
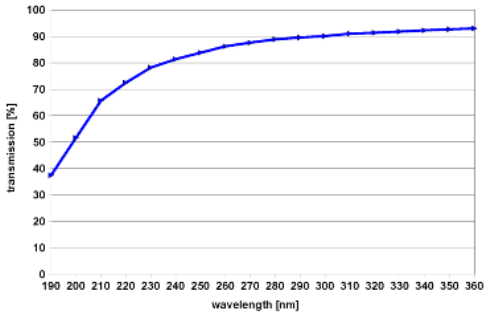
Perfect for Imaging, UV analysis or automated measurements

Film has unique set of properties enabling support of cell physiology & sophisticated imaging technology

- High Resolution Live Cell Imaging
- Fluorescence Resonance Energy Transfer (FRET)
- Fluorescence Recovery after Photobleaching (FRAP)
- Laser Scanning Confocal Microscopy (LCM)
- Low Intensity Fluorescence



HeLa Cell with JC-1 mitochondrial staining and Hoechst3342 DNA Staining



Film "Transparent" to UV-A and UV-B Light

Refractive Index – 1.34
Abbe Number – 70
Light Transmission @ 240 nm - >85%
@ 300 nm - >90%
Individual Well Planarity - <10 um
Plate Planarity - < 50 um

Part Numbers and Available Formats

Ask about any other desired sizes and formats

	24 –well	96-well*	6-well	Slide Plate** (1 well)	Slide Plate** (2 well)
Coy Item #	8602000	8602001	Coming Summer of 2012	8602002	8602003
Inner Well Diameter (bottom)	13.2mm dia	6mm dia		52.6 x 20.6mm	24.25 x 20.6mm
Total Volume/Well	1880 µl	428 µl		10.84 ml	5.04 ml
Suggested Working Volume	500-1000 µl	100-200 µl		2000 µl	1000 µl
Material of Body of Plate	Black Polystyrene			Cycloolefin	
Lid	One with each plate				
Sterile	Yes, sterile bagged				
Packaging Format	1/bag and box of 20			4/bag and box of 80	

** Compliant to SBS (Society for Biomolecular Screening) standards formats*

*** Reusable metal clip available to extend plate to full length of standard microscope slide (76mm)*

Bibliography

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