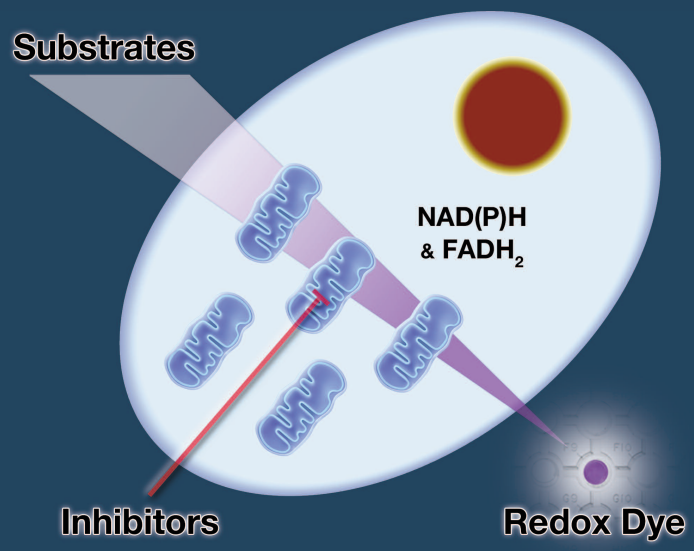
MitoPlate™ Technology

Analyzing Mitochondria at Higher Resolution

New Probes of Mitochondrial Function

MitoPlates from Biolog provide a powerful new research tool by allowing scientists to run preconfigured sets of 96 mitochondrial function assays in one experiment. Mitochondria can be interrogated and characterized in novel ways, looking at rates of substrate metabolism, sensitivity to drugs and other chemicals, and effects of mutations in mitochondria-related genes.



Substrates or inhibitors permeate the cell membrane and enter mitochondria, stimulating or inhibiting production of NAD(P)H or $FADH_2$ which is then measured using a tetrazolium redox dye.

Investigate how mitochondria change with:

- *Cell differentiation*
- *Cancer & ageing*
- *Neurological disorders*
- *Metabolic disorders*
- *Immune cell activation*
- *Bacterial/viral infection*
- *Inborn genetic defects*

Assay Principle

Mitochondrial function is assayed by measuring the rates of electron flow into and through the electron transport chain from metabolic substrates that produce NAD(P)H or $FADH_2$ such as L-malate, succinate, pyruvate, etc. Each substrate follows a different route, using different transporters to enter the mitochondria and different dehydrogenases to produce NAD(P)H or $FADH_2$, The electrons travel from the beginning (complex 1 or 2) to the distal portion of the electron transport chain where a tetrazolium redox dye (MC) acts as a terminal electron acceptor that turns purple upon reduction. Additional MitoPlate assays probe the sensitivity of the mitochondria to a set of 22 diverse inhibitors.

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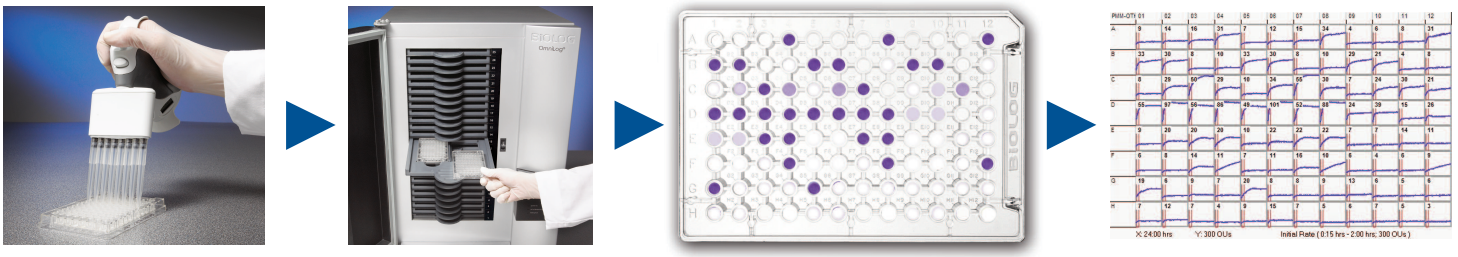
MitoPlate S-1 with 30 Substrates:

No Substrate Control	α-D-Glucose	Glycogen	D-Glucose-1-PO4
D-Glucose-6-PO4	D-Gluconate-6-PO4	D,L-α-Glycerol-PO4	L-Lactic Acid
Pyruvic Acid	Citric Acid	D,L-Isocitric Acid	cis-Aconitic Acid
α-Keto-Glutaric Acid	Succinic Acid	Fumaric Acid	L-Malic Acid
α-Keto-Butyric Acid	D,L-β- Hydroxy-Butyric Acid	L-Glutamic Acid	L-Glutamine
Ala-Gln	L-Serine	L-Ornithine	Tryptamine
Sparker Malate Control	Acetyl-L-Carnitine	Octanoyl-L-Carnitine	Palmitoyl-D,L-Carnitine
Pyruvic Acid	γ-Amino-Butyric Acid	α-Keto-Isocaproic Acid	L-Leucine

MitoPlate I-1 with 22 Inhibitors:

No Substrate Control	No Inhibitor Control	Meclizine
Complex I Inhibitor Rotenone	Complex I Inhibitor Pyridaben	Berberine
Complex II Inhibitor Malonate	Complex II Inhibitor Carboxin	Alexidine
Complex III Inhibitor Antimycin A	Complex III Inhibitor Myxothiazol	Phenformin
Uncoupler FCCP	Uncoupler 2,4-Dinitrophenol	Diclofenac
Ionophore, K Valinomycin	Calcium / $CaCl_2$	Celastrol
Gossypol	Nordihydro-guaiaretic acid	Trifluoperazine
Polymyxin B	Amitriptyline	Papaverine



Simple Assay Procedure:

STEP 1: Prepare and pipet assay mixture containing cell permeabilizing buffer and redox dye into appropriate wells.

STEP 2: Start the assays by adding 2x cell suspension to all wells.

STEP 3: Load the MicroPlate into the OmniLog® for kinetic reading of the rate of purple color formation.

Ordering Information:

Catalog #	Description
14104	MitoPlate I-1
14105	MitoPlate S-1
72303	Biolog MAS
74353	Biolog Redox Dye Mix MC
96161	OmniLog PM-M System (NA Plug)
96162	OmniLog PM-M System (Schuko Plug)
96164	OmniLog PM-M System (UK Plug)

Not Included: Saponin permeabilizing solution and substrate solutions for MitoPlate I-1. Please review Instructions for Use prior to ordering.

Unique Features and Advantages:

- MitoPlates are preloaded with 96 tests ready for use
- Plates designed to measure effects of substrates and inhibitors on mitochondrial function
- Easy, robust protocols with any cell type – adherent or suspension cells, transformed cell lines or primary cells
- Assays need only 20,000 to 40,000 cells per well
- Novel tetrazolium dye chemistry provides a terminal electron acceptor in easy to read colorimetric assays
- OmniLog instrument provides automated temperature controlled incubation and kinetic reading of multiple plates (50 plates at 15 min, or 16 at 5 min intervals)

OmniLog System and Analysis Software

The OmniLog Instrument and associated software allows for real-time recording and kinetic analysis of electron flow rates. The OmniLog can simultaneously incubate and read up to 50 MitoPlates and provides powerful analysis tools to get the most from your experimental data.

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