

CANCER RESEARCH

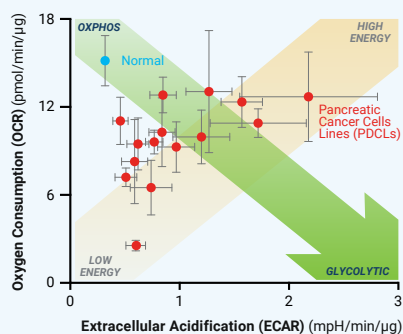
Agilent Seahorse XF Technology

Technical Flyer



XF Technology Measures Cancer Cell Function in Real-Time

Measure bioenergetics and metabolic switch driving cancer proliferation

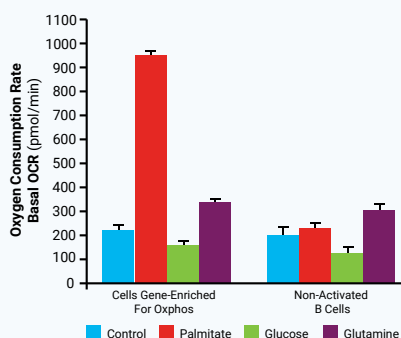


Pancreatic tumor cells switch to a glycolytic phenotype.

Adapted from Hardie et al., (2017) Cancer Metab

- Glycolysis drives rapid proliferation of cancer cells
- Cancer cells have a distinct metabolic phenotype from healthy cells
- Metabolic phenotype and adaptations vary across different cancer cell lines

Measure substrate preferences: the fuels driving proliferation

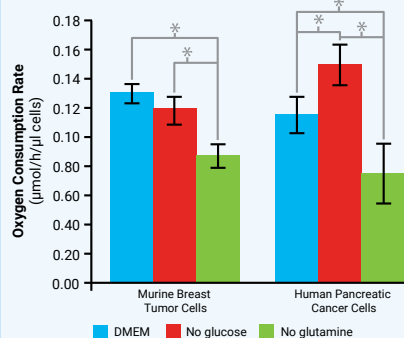


Lymphoma cancer cell subsets have different substrate preferences.

Adapted from Caro P et al, (2012) Cancer Cell

- Cancer cells alter their substrate preferences for rapid proliferation
- Substrate preferences vary between healthy cells and cancer cells
- Translational studies have demonstrated substrate liabilities in various tumors

Measure tumor micro-environment: hypoxia or 3D cultures



Breast cancer and pancreatic cell lines require glutamine for hypoxia survival.

Adapted from Fan J et al, (2013) Mol Syst Biol

- Mimic the complex tumor environment during experiments
- Seahorse enables metabolic measurements in 3D cultures such as spheroids and islets
- Seahorse XFe Analyzers can be used in a hypoxia chamber

	OCR / ECAR Ratio (OXPHOS/Glycolytic)		
	Experiment # 1	Experiment #2	Experiment #3
Non-Invasive			
MCF-7	1.4	1.8	2.3
MCF-7R	2.5	2.0	1.9
ZR75.1	1.6	1.6	n.d.
Invasive			
MDA-MB-231	0.36	0.86	1.1
MDA-MB-157	0.4	1.1	1.5
MDA-MB-361	0.7	0.89	0.89

Invasive breast cancer cells have lower OCR/ECAR Ratio than noninvasive breast cancer cells.

Adapted from Kenny et al., (2017) Oncogene

Discover requirements and drivers of cancer cell proliferation



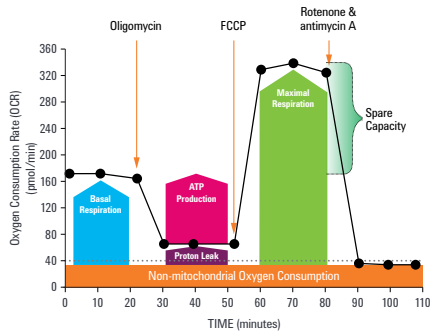
XFe 96

Seahorse XF Technology

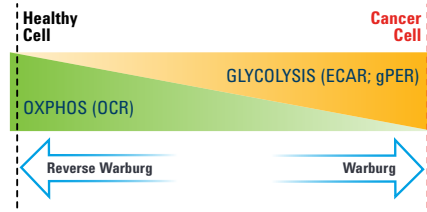
- Live cell
- Real-time
- Label-free
- Dynamic injection ports
- Measures both major metabolic pathways simultaneously – respiration and glycolysis

Researchers are using XF Technology to Push the Boundaries of Cancer Research

Seahorse XF Cell Mito Stress Test Profile
Mitochondrial Respiration

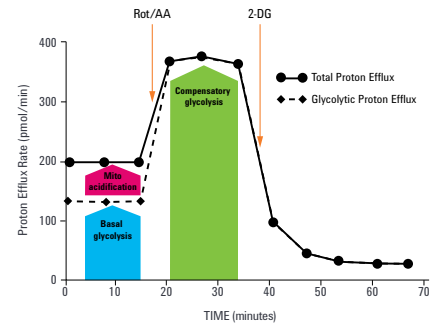


The Seahorse XF Cell Mito Stress Test provides consistent and reliable measurements of key parameters of mitochondrial function.



Proliferating cancer cells switch to a glycolytic phenotype characterized by high extracellular acidification.

Seahorse XF Glycolytic Rate Assay Profile
Glycolytic Rates



The Seahorse XF Glycolytic Rate Assay provides an accurate measure of glycolytic rates by subtracting out mitochondrial sources of acidification.



XF Assays & Kits provide routine, reliable, and consistent results for:

- Mitochondrial Function
- Glycolytic Function
- Metabolic Phenotype
- Cell Fuel Flexibility/Preference



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Assay Kits Available:
XF Real Time Activation Assay
XF Cell Mito Stress Test Kit
XF Glycolysis Stress Test Kit
XF Glycolytic Rate Assay Kit
XF Mito Fuel Flex Test Kit
XF Cell Energy Phenotype Test Kit

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