Cell Lines

XF Assays have been used to measure normal and pathophysiological bioenergetics in a wide variety of primary and immortalized cell types.

Although potentially any cell type can be measured in an XF assay, good cell culture practice and optimization of media components and environment are keys to ensuring relevant and robust bioenergetic measurements.

The following database identifies cell types that have been successfully measuremed in XF assays.

Cell/Tissue/Organelle	Species	Assay/Area of Study
Primary muscle	human, murine	FAO / mitochondria dysfunction in disease and aging
Primary adipocytes	human, murine	FAO/ metabolic diseases
Primary cardiomyocytes	murine, feline	Ca++ signaling/cardiovascular disease
Primary hepatocytes	human, murine, rat	FAO, mitochondria toxicity, insulin action/metabolic diseases
Pancreatic islet	murine	insulin secretion/diabetes
Primary cortical neurons	murine, rat	mitochondria dysfunction/neurodegenerative disease & aging
Primary embryonic fibroblasts	human, murine	FAO, mitochondria dysfunction, drug screen
Primary lymphocytes	human, murine	diabetes, signaling, autoimmune disease
Glomeruli	rat	renal function, ischemia-reperfusion injury and repair
Primary glomerular podocytes	murine	renal function, ischemia-reperfusion injury and repair
Primary proximal tubule cells	rabbit	renal function, ischemia-reperfusion injury and repair
Primary umbilical vein endothelial cells	human	angiogenesis, mitochondrial dysfunction, diabetes
Primary retina (tissue punch)	bovine	retinitis pigmentosa, age related macular degeneration
Primary stomach epithelia	murine	secretory function

(tissue punch)		
Cybrids and cybrid Rho0	human	metabolic disorders, mitochondrial dysfunciton
Glioma neurospheres	human	Cancer, drug screening
C2C12 muscle cell line, blasts and tubes	murine	FAO, insulin action/diabetes
L6 myoblasts (skeletal muscle)	rat	FAO/metabolic diseases
3T3 L1 differentiated to adipose-like	murine	FAO
HUVEC umbilical vein endothelial cell line	human	cardiovascular disease, angiogenesis, mitochondrial dysfunction, diabetes
CHO ovary cell line	Chinese hamster	overexpression studies
HEK293 transformed embryonic kidney cell line	human	used as test tube with membrane
RMS-13 muscle rhabdomyosarcoma cell line	human	FAO, diabetes, obesity
INS-1 insulinoma	rat	insulin secretion/ diabetes
LN18 glioblastoma cell line	human	cancer
K562, Jurkat leukemia cell lines	human, rat	cancer
MCF-7, MD-MB-231, MDMB-431 breast cancer cell lines	human	cancer
HCT116 , SW480 colon carcinoma cell line	human	cancer
UMRC-2 renal carcinoma cell line	human	cancer
HepG2, H4II-E hepatoma cell line	Human, rat	cancer, FAO, toxicity
PC-3, LnCap prostate cancer cell line	human	cancer
H460, A549 NSCLC cell line	human	cancer
Hela cervical cancer cell line	human	cancer

L929 embryonic fibroblast cell line	murine	inflammation
CH27, A20, BW1349 B-cell hybridomas	murine	substrate utilization and growth
Permeabilized neonatal cardiomyocytes	murine	mitochondrial function, ischemia-reperfusion