

MILLIPLEX[®] MAP
Human Fatty Acid Oxidation
Magnetic Bead Panels 1 & 2

HFA01MAG-11K
HFA02MAG-11K



Mitochondria play an important role in many aspects of cellular metabolism, including the critical pathways controlling fatty acid oxidation (FAO). One widely studied pathway located within the mitochondrial matrix is known as the β -oxidation pathway, comprised of more than 25 enzymes and specific transport proteins involved in regulating the degradation of fatty acids (FA). Deficiencies of these specific FAO proteins are implicated in several human diseases. Studies have shown that abnormalities in FAO pathway underlie the development of insulin resistance, type-2 diabetes, and cardiovascular disease, and are believed to be the cause in 1-3% of unexplained sudden infant death syndrome (SIDS).

Researchers would greatly benefit from well-validated tools that can be used to assay for the levels of proteins controlling FA metabolism. In order to meet the needs in this particular field, we have developed a multiplex immunoassay, the MILLIPLEX[®] MAP Human Fatty Acid Oxidation Magnetic Bead Panels 1 and 2, to enable researchers to explore 9 particular FAO proteins. This will enhance customers' ability to quickly assess various disease states, drug efficacy, toxicity and more.

EMD Millipore is pleased to announce the release of two new magnetic bead panels for metabolic disease research: **MILLIPLEX[®] MAP Human Fatty Acid Oxidation Panels 1 and 2.**

Panel 1 contains ACAA2, LPBE, SCHAD, and TFP

Panel 2 contains CPT2, DRCR1, ETF, MCAD, and MFE2

MILLIPLEX[®] MAP Human Fatty Acid Oxidation Panels 1 and 2 may be used for the analysis of cell lysate or tissue extract.

The FAO proteins play important roles in:

- Diabetes research
- Metabolic syndrome research
- Cardiovascular disease research

Representative Data

MILLIPLEX[®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 1

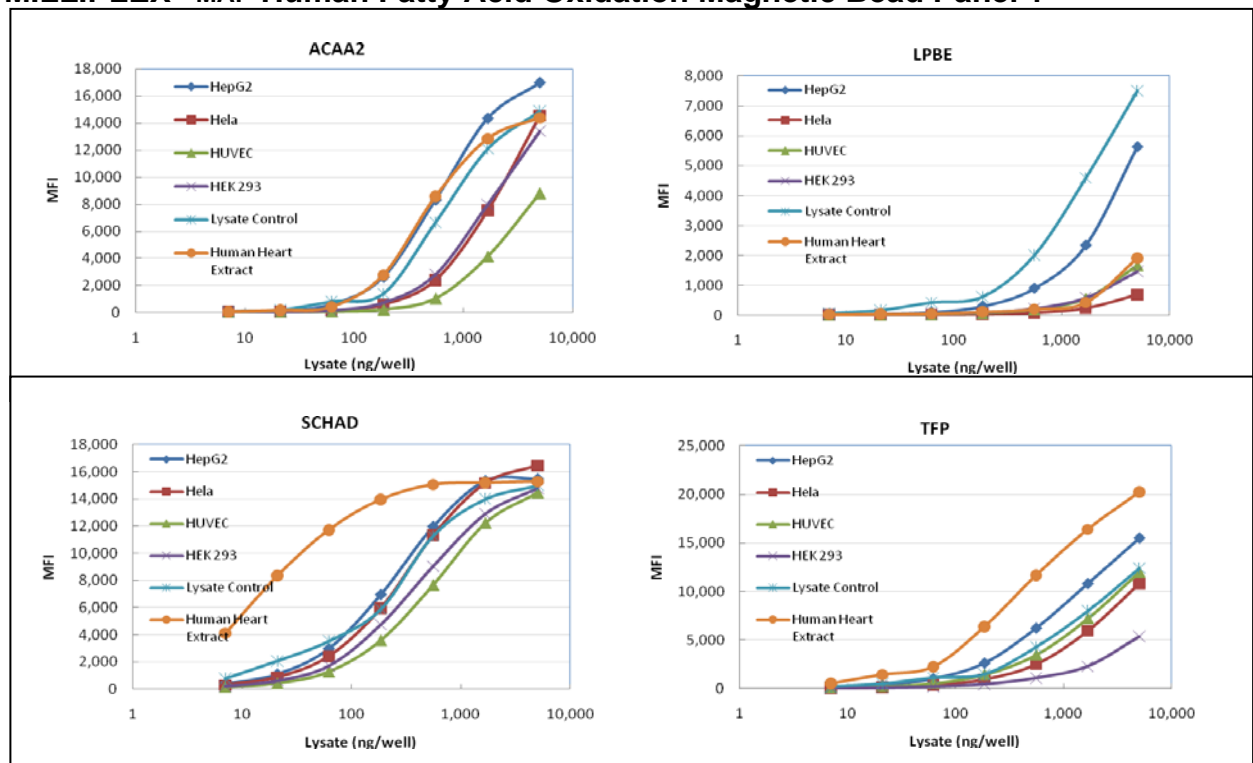


Figure 1. Multiplex analysis of human cell lysates and tissue extract with Human Fatty Acid Oxidation Magnetic Bead Panel 1. HepG2, HeLa, HUVEC cell lysates, human heart extract and HepG2 Lysate Control were prepared according to the procedures described in the protocol. The lysates were serially diluted with Assay Buffer and analyzed with MILLIPLEX[®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 1 according to the assay protocol. The Median Fluorescence Intensity (MFI) was measured with the Luminex[®] system.

Representative Data, continued

MILLIPLEX[®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 2

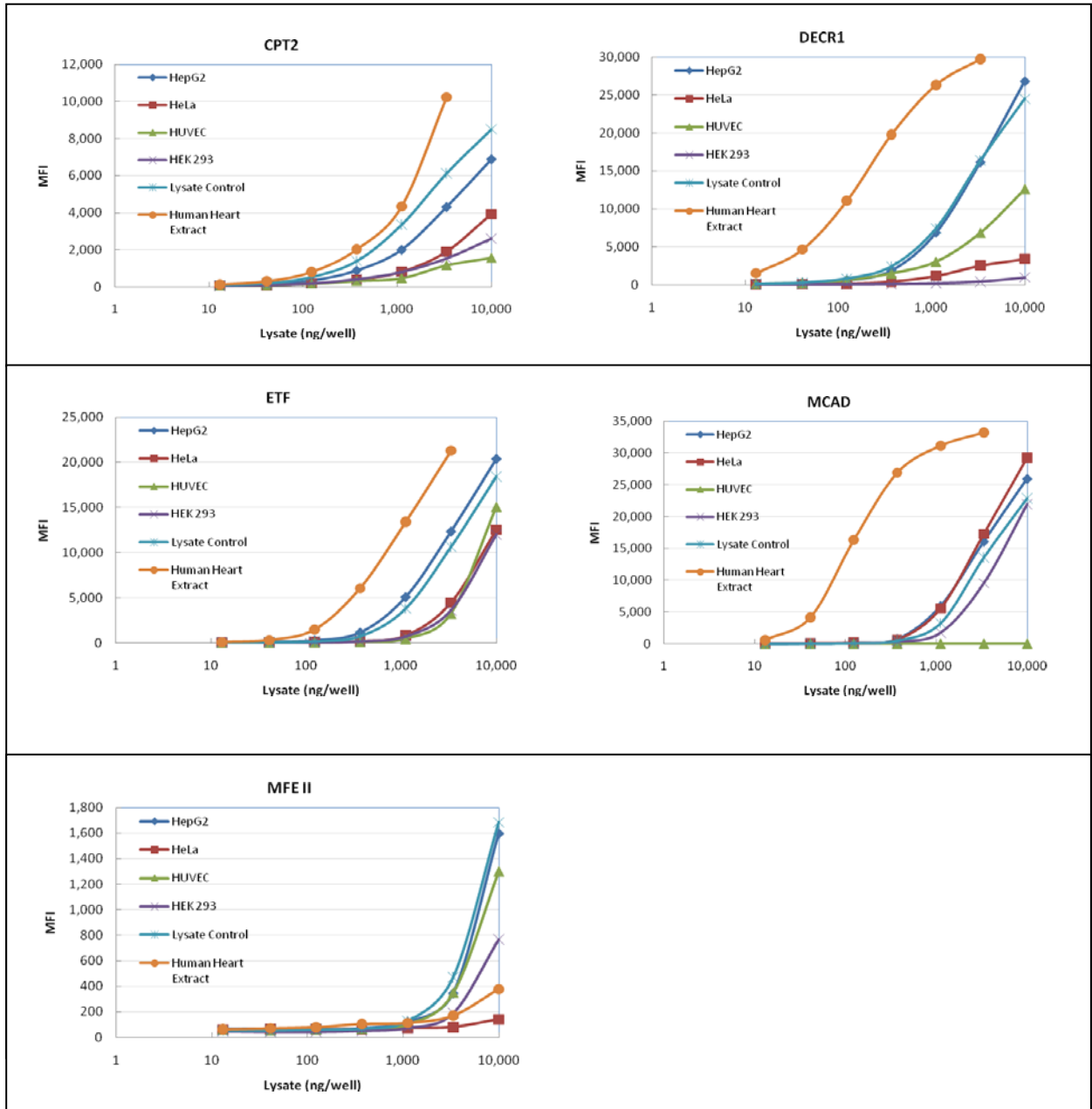


Figure 2. Multiplex analysis of human cell lysates and tissue extract with Human Fatty Acid Oxidation Magnetic Bead Panel 2. HepG2, HeLa, HUVEC cell lysates, human heart extract and HepG2 Lysate Control were prepared according to the procedures described in the protocol. The lysates were serially diluted with Assay Buffer and analyzed with MILLIPLEX[®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 2 according to the assay protocol. The Median Fluorescence Intensity (MFI) was measured with the Luminex[®] system.

Performance Specifications

Specificity

Cross-reactivity between the antibodies and any of the other analytes in each panel is non-detectable or negligible.

Assay Applications

- Two hours incubation is recommended for best results.
- These assays require 25 μ L diluted cell lysate.
- These kits must be run using Assay Buffer 1 (provided).
- For MILLIPLEX[®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 1, we recommend using 1 - 5 μ g cell lysate/well (recommended starting concentration is 5 μ g cell lysate/well).
- For MILLIPLEX[®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 2, we recommend using 5 - 10 μ g cell lysate/well.

Species Cross-reactivity

MILLIPLEX[®] MAP Human Fatty Acid Oxidation Panels 1 and 2 are human-specific, they do not cross-react with mouse and rat samples.

Precision

Intra-assay precision is generated from the mean of the %CVs from 8 reportable results across two different concentrations of analytes in a single assay. Inter-assay precision is generated from the mean of the %CVs from 48 reportable results across two different concentrations of analytes from 6 different assays.

MILLIPLEX [®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 1		
Analyte	Precision*	
	Intra-Assay (%CV)	Inter-Assay (%CV)
ACAA2	3	5
LPBE	3	6
SCHAD	1	4
TFP	2	5

MILLIPLEX [®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 2		
Analyte	Precision*	
	Intra-Assay (%CV)	Inter-Assay (%CV)
CPT2	4	3
DECR1	2	7
ETF	2	8
MCAD	1	2
MFE2	4	4

*Intra- and Inter-Assay CVs based on MFI values.

Selected References

- **Houten SM, Wanders RJ.** (2010) A general introduction to the biochemistry of mitochondrial fatty acid β -oxidation. *J Inher Metab Dis.* 33(5):469-77.
- **deMoura MB, et al.** (2010) Mitochondrial dysfunction in neurodegenerative diseases and cancer. *Environ Mol Mutagen.* 2010 Jun;51(5):391-405.
- **Bartlett K, Eaton S.** (2004) Mitochondrial β -oxidation. *Eur J Biochem.* 2004 Feb;271(3):462-9.

Related Immunoassays

These are the first two panels in our MILLIPLEX[®] MAP Cellular Metabolism portfolio. Watch our website for products as they become available. For a complete list of our available products, please visit our website at www.millipore.com/milliplex.

BioPharma Services

- EMD Millipore's **BioMarker Services** has been performing immunoassays for over 25 years
- Services available for RIAs, ELISAs, IRMAs and multiplex assays
- Quality control, reproducible results, and confidentiality are of paramount importance to our Assay Services team
- EMD Millipore's **Regulatory Compliant Laboratory** is uniquely positioned to provide bioanalytical services to support your preclinical and clinical studies

Ordering Information

Description	Quantity	Cat. No.
MILLIPLEX [®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 1	96-well	HFA01MAG-11K
MILLIPLEX [®] MAP Human Fatty Acid Oxidation Magnetic Bead Panel 2	96-well	HFA02MAG-11K

To Place an Order or Receive Technical Assistance

In the U.S. and Canada, call toll-free: 1-800-Millipore (1-800-645-5476)

In Europe, please call Customer Service:

France: 0825.045.645

Italy: 848.845.645

Spain: 901.516.645

English UK: 0870.900.46.45

Germany: 01805.045.645

For other countries across the world, please visit www.millipore.com/offices.

For Technical Service, please visit www.millipore.com/techservice.