

Lipid-Related Factors and Metabolic Syndrome

Although lipids are essential for homeostasis and many aspects of reproduction, organ and cellular physiology, they are also linked to pathological processes such as obesity, diabetes and the metabolic syndrome. Some key players are apolipoproteins, C-reactive proteins (C-RPs), fatty acid binding proteins (FABPs), fatty acid synthase (FAS) and sphingosine-1-phosphate (S1P). Apolipoproteins comprise several major classes labeled alphabetically and their subclasses designated with specific numbers (e.g. ApoA1, ApoA2, ApoA3, etc.). The ratio of ApoB (primarily LDL) to ApoA1 (HDL-C) is a good indicator of cardiovascular risk. FABPs are expressed in a tissue-specific manner and shuttle fatty acids to cellular compartments. Some have important roles in regulating metabolism such as adipocyte FABP (aP2) which can affect insulin sensitivity, lipid metabolism and is involved in atherosclerosis. An important inflammatory marker, C-RP, is mainly synthesized in the liver though it is also produced in atherosclerotic lesions, the kidney, neurons, and alveolar macrophages. Its physiological role is to bind to phosphatidylcholine expressed on the surface of dead or dying cells (and some bacteria) in order to activate the complement system via the C1q complex. Hepatic C-RP synthesis is stimulated by the adipokines leptin and IL-6 and down-regulated by adiponectin. C-RP has been shown to impair insulin signaling and contributes to atherothrombosis. Synthesis of fatty acid (de novo) is due to the sole mammalian enzyme, FAS, whose gene expression in adipose tissue is linked to visceral fat accumulation, impaired insulin sensitivity, increased circulating fasting insulin, IL-6, leptin and RBP4. In addition, FAS is highly expressed in most human carcinomas and is associated with poor prognosis in breast and prostate cancer. FAS and fatty acid metabolism in cancer has become a focus for the potential diagnosis and treatment of cancer. S1P is a signaling sphingolipid, also referred to as a bioactive lipid mediator. S1P resides normally on lipoproteins, particularly HDL, and albumin in the circulation. Collective data appears to identify a novel role for sphingolipids in contributing to the prothrombotic and proinflammatory phenotype of the obese adipose tissue currently believed to play a major role in the pathogenesis of obesity-mediated cardiovascular and metabolic disease.

Assay Kits

Name	Cat. #
Adipogenesis Colorimetric/Fluorometric Assay Kit	K610-100
Adiponectin (human) Elisa Assay Kit	K4901-100
Adiponectin (mouse) Elisa Assay Kit	K4902-100
Adiponectin (rat) Elisa Assay Kit	K4903-100
CETP Activity Fluorometric Assay Kit	K601-100
CETP Inhibitor Drug Screening Kit (Fluorometric)	K602-100
Cholesterol/Cholesteryl Ester Quantitation Colorimetric/Fluorometric Kit	K603-100
Choline/Acetylcholine Quantification Colorimetric/Fluorometric Kit	K615-100
CTRP5 (human) Competitive ELISA Kit	K4925-100
Free Fatty Acid Quantification Colorimetric/Fluorometric Kit	K612-100
FTO (human intracellular) ELISA Kit	K4921-100
FTO (mouse intracellular) ELISA Kit	K4922-100
Glucose Colorimetric/Fluorometric Assay Kit	K606-100
Glucose Colorimetric Assay Kit II	K686-100
PicoProbe™ Glucose Fluorometric Assay Kit	K688-100
Free Glycerol Colorimetric Assay Kit II	K634-100
Free Glycerol Colorimetric/Fluorometric Assay Kit	K630-100
PicoProbe™ Free Glycerol Fluorometric Assay Kit	K643-100
Glycerol-3-Phosphate Dehydrogenase Activity Colorimetric Assay Kit	K640-100

Assay Kits Continued...

Name	Cat. #
HDL and LDL/VLDL Quantification Colorimetric/Fluorometric Kit	K613-100
β-Hydroxybutyrate (β-HB) Colorimetric Assay Kit	K632-100
Lipase Activity Colorimetric Assay Kit	K722-100
Nampt (Visfatin/PBEF) (human) Intracellular ELISA Kit	K4909-100
Nampt (Visfatin/PBEF) (mouse/rat) Intracellular ELISA Kit	K4910-100
Nampt (Visfatin/PBEF) (mouse/rat) Serum ELISA Kit	K4908-100
Phosphatidylcholine Colorimetric/Fluorometric Assay Kit	K576-100
PhosphoSeek™ PDE5A Fluorometric Assay Kit	K705-400
PhosphoSeek™ Sphingosine Kinase-1 Fluorometric Assay Kit	K708-400
PLTP Activity Fluorometric Assay Kit	K604-100
PLTP Inhibitor Drug Screening Kit (Fluorometric)	K605-100
RBP4 (human) Competitive ELISA Kit	K4911-100
RBP4 (human) ELISA Kit	K4912-100
RBP4 (mouse/rat) ELISA Kit	K4913-100
Triglyceride Quantification Colorimetric/Fluorometric Kit	K622-100
PicoProbe™ Triglyceride (TG) Fluorometric Assay Kit	K614-100
Visfatin (human) Elisa Assay Kit	K4907-100

Antibodies

Name	Cat. #
ABAD/HADH2 Antibody	3246-100
ACAA1 Antibody	3536-100
ACAA2 Antibody	3538-100
ACAD-9 Antibody	3239-100
ACADL Antibody	3139-100
ACADM Antibody	3137-100
ACADS Antibody	3539-100
ACADSB Antibody	3150-100
ACADSB Antibody	3157-100
ACADVL Antibody	3240-100
ACAT1 Antibody	3245-100
ACAT2 Antibody	3254-100
Adiponectin Antibody	5900-50
Adiponectin Antibody	5901-50, 250
Adiponectin Antibody	5902-50, 250
Adiponectin Antibody	5903-50, 250
ApoA1 Antibody	5693-100
ApoA1 Antibody	5695-100
ApoE3 Antibody	5696-100
ApoE4 Antibody	5699-100
ApoLipoprotein B Antibody	3661-100
ApoSAA Antibody	5324-100
CETP Antibody	3413-100
CGI-58 Antibody	3901-100
ERAB/HCD2 Antibody	3255-100
FABP1 Antibody	5501-200
FABP3 Antibody	5503-100
FABP4 Antibody	5504-100
FABP4 Antibody	3717-100
FABP5 Antibody	5505-100
FABP7 Antibody	5507-100
FATP4 Antibody	3268-100
HADH/HCDH Antibody	3264-100
HSD17B4/MPF-2 Antibody	3617-100
HSD17B4/MPF-2 Antibody	3627-100
LDLR Antibody	3839-100
LRP-5/6 Antibody	3714-100
LRP-5/6 Antibody	3801-100
LXR Antibody	3641-100
Perilipin A Antibody	3543-100
Sphingosine Kinase 1 (SPK1) Antibody	3883-100
Sphingosine Kinase 2 (SPK2) Antibody	3884-100
TFPI Antibody	3379-100

Antihyperlipidemics

Name	Cat. #
Lovastatin	1692-50, 250
Mevastatin	1694-50, 250
Rosuvastatin	1955-5, 25
Simvastatin	1693-50, 250

Phosphodiesterases (PDEs)

Name	Cat. #
IBMX	1714-100
Zaprinast	1715-25

Proteins / Enzymes**ACAT (Acyl-CoA cholesteryl acyl transferase)**

Name	Cat. #
ACAT-2, human recombinant	4910-20, 1000

Apolipoproteins

Name	Cat. #
ApoA-1, human recombinant	4693-20, 100, 1000
ApoA-1, rat recombinant	4695-20, 100, 1000
Apo-D, human recombinant	4326-10, 1000
ApoE2, human recombinant	4760-50, 500, 1000, 5000
ApoE3, human recombinant	4696-50, 500, 1000, 5000
ApoE4, human recombinant	4699-50, 500, 1000, 5000
Apo-J/Clusterin, human plasma	4325-10, 500
Apo-SAA, human recombinant	4324-50, 500, 1000
SAA1 monkey, recombinant	4332-10, 1000

C-reactive proteins

Name	Cat. #
CRP, human recombinant	4863-10, 50, 1000
CRP, human recombinant	4864-250, 1000

Enzyme Inhibitors

Name	Cat. #
ACC2 Inhibitor	1717-1
Cerulenin	1579-5, 50
Fingolimod (FTY-720A, FTY720)	1618-5, 25
SCD1 Inhibitor	1716-1

Fatty Acid Binding Proteins (FABPs)

Name	Cat. #
FABP1, human recombinant	4501-25, 100, 1000
FABP3, human recombinant	4503-25, 100
FABP4, human recombinant	4504-25, 100, 1000
FABP5, human recombinant	4505-25, 100, 1000
FABP7, human recombinant	4507-25, 100, 1000