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## Aspects involved in the (patho)physiology of the metabolic syndrome

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## **Abbreviations**



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2D	2-dimensional
6-FAM	6-carboxyfluorescein
6-TAMRA	6-carboxytetramethylrhodamine
ABCA1 / <i>abca1</i>	ATP-binding cassette transporter A1
ACC / <i>acc</i>	Acetyl-CoA carboxylase
ACO / <i>aco</i>	Acyl-CoA oxidase
ALAT	Alanine aminotransferase
Apo / <i>apo</i>	Apolipoprotein
ATGL	Adipose tissue triglyceride lipase
ATP	Adenosine triphosphate
β-HB	β-hydroxybutyrate
BMI	Body mass index
BSA	Bovine serum albumin
cDNA	Complement DNA
CHD	Coronary heart disease
CLA	Conjugated linoleic acid
CM	Chylomicron
CO	Cholesterol oleate
CoA	Coenzyme A
CPCA	Cyclopropane carboxylic acid
CPT	Carnitine palmitoyl transferase
CT	Carnitine/acylcarnitine translocase
Cyp7A1 / <i>cyp7a1</i>	Cholesterol 7-α-hydroxylase
DGAT / <i>dgat</i>	Acyl:diacylglycerol transferase
DHA	Docosahexaenoic acid
DTT	DL-dithiothreitol
ELISA	Enzyme-linked immunoabsorbent assay
EPA	Eicosapentaenoic acid
FA	Fatty acid(s)
FABP <sub>c</sub>	Cytosolic fatty acid binding protein
FABP <sub>pm</sub>	Plasma membrane fatty acid binding protein
FACS	Fatty acid CoA synthase
FAS / <i>fas</i>	Fatty acid synthase
FAT	Fatty acid translocase
FATP	Fatty acid transport protein
FFA	Free fatty acid(s)
FPLC	Fast protein liquid chromatography
FXR / <i>fxr</i>	Farnesoid X receptor
G-6-P	Glucose-6-phosphate
(n-)HDL	(nascent-)high density lipoprotein
HFC	High-fat/cholesterol
HL	Hepatic lipase
HMG-CoA	3-hydroxy-3-methylglutaryl CoA
<i>hmgs</i>	HMG-CoA synthase
HPRT	hypoxanthine guanine phosphoribosyl transferase

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## Abbreviations

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HPS	Hematoxylin-phloxine-saffron
HPTLC	High pressure thin layer chromatography
HSL	Hormone sensitive lipase
HSPG	Heparin sulphate proteoglycans
IDL	Intermediate density lipoprotein
IL	Interleukine
IPG	Immobilized pH gradient
LBM	Lean body mass
LC-FA	Long chain fatty acid
LDL	Low density lipoprotein
LDLR / <i>ldlr</i>	LDL receptor
LPL / <i>lpl</i>	Lipoprotein lipase
LRP	LDLR-related protein
LXR / <i>lxr</i>	Liver X receptor
MALDI-TOF	Matrix-assisted laser desorption/ionisation –time of flight
MCAD / <i>mcad</i>	Medium chain acyl-CoA dehydrogenase
MP	Methyl palmostirate
MRI	Magnetic resonance imaging
mRNA	Messenger RNA
MTP / <i>mttp</i>	Microsomal triglyceride transfer protein
NS	Not significant
PBS	Phosphate buffered saline
PC	Principle component
PCA	Principle component analysis
(RT)-PCR	(Reverse transcriptase)-Polymerase chain reaction
PEPCK / <i>pepck</i>	Phosphoenol pyruvate carboxykinase
PK / <i>pk</i>	Pyruvate kinase
PPAR / <i>ppar</i>	Peroxisome proliferator-activated receptor
PS	Phytosphingosine
PUFA	Polyunsaturated fatty acids
RIA	Radioimmuno assay
RXR / <i>rxr</i>	Retinoic X receptor
SAA	Serum amyloid A
SD	Standard deviation
SR-B1	Scavenger receptor B1
SREBP / <i>srebp</i>	Sterol regulatory element binding protein
<i>t10,c12</i>	<i>Trans</i> 10, <i>cis</i> 12
TG	Triglyceride(s)
TNF	Tumor necrosis factor
VLDL	Very low density lipoprotein
WAT	White adipose tissue
WHO	World health organization
WT	Wild-type

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**List  
of  
Publications**



Ilse Duivenvoorden, Peter J Voshol, Patrick CN Rensen, Wim van Duyvenvoorde, Johannes A Romijn, Jef J Emeis, Louis M Havekes and Willem F Nieuwenhuizen  
Dietary sphingolipids lower plasma cholesterol and triacylglycerol and prevent liver steatosis in APOE\*3Leiden mice  
American Journal of Clinical Nutrition 84: 312-21,2006

Ilse Duivenvoorden, Baukje de Roos, Garry Ruckridge, Martin Reid, Karen Ross, Robert-Jan AN Lamers, Peter J Voshol, Louis M Havekes, and Bas Teusink  
Response of apolipoprotein E\*3-Leiden transgenic mice to dietary fatty acids: combining liver proteomics with physiological data  
The FASEB Journal 19:813-815,2005

Ilse Duivenvoorden, Bas Teusink, Patrick CN Rensen, Folkert Kuipers, Johannes A Romijn, Louis M Havekes and Peter J Voshol  
Acute inhibition of hepatic  $\beta$ -oxidation in APOE\*3Leiden mice does not affect hepatic VLDL secretion or insulin sensitivity  
Journal of Lipid Research 46: 988-993,2005

Ilse Duivenvoorden, Bas Teusink, Patrick C Rensen, Johannes A Romijn, Louis M Havekes and Peter J Voshol  
Apolipoprotein C3-deficiency results in diet-induced obesity and aggravated insulin resistance in mice  
Diabetes 54:664-671,2005

Geldof AA, Plaizier MA, Duivenvoorden I, Ringelberg M, Versteegh RT, Newling DW and Teule GJ  
Cell cycle perturbations and radiosensitization effects in a human prostate cancer cell line  
Journal of Cancer Research and Clinical Oncology 129:175-182,2003

Mastbergen SC, Duivenvoorden I, Versteegh RT and Geldof AA  
Cell cycle arrest and clonogenic tumor cell kill by divergent chemotherapeutic drugs  
Anticancer Research 20:1833-1838,2000



# **Curriculum Vitae**



Ilse Duivenvoorden werd geboren op 9 september 1977 in Heemstede. In 1996 behaalde zij haar VWO diploma aan het R.K. Lyceum Sancta Maria te Haarlem. In september van datzelfde jaar begon zij aan de studie Medische Biologie aan de Vrije Universiteit te Amsterdam. Het propedeutisch examen werd in september 1997 behaald, gevolgd door het doctoraal examen medische biologie in september 2000. In het kader van het doctoraal examen werden twee onderzoeksstages uitgevoerd. De eerste stage werd verricht bij de afdeling Nucleaire Geneeskunde aan de Vrije Universiteit Medisch Centrum (VUMC) onder begeleiding van Prof. Dr. G.J.J. Teule. De tweede stage werd verricht bij de onderzoeksgroep Lipiden, afdeling Vaat en Bindweefsel Onderzoek bij TNO Preventie en Gezondheid te Leiden onder begeleiding van Dr. H.M.G. Princen. Van november 2000 tot en met februari 2005 was zij aangesteld als assistent in opleiding (AIO) aan het Leids Universitair Medisch Centrum (LUMC) op de afdeling Algemene Inwendige Geneeskunde op een door NWO/ZonMw gesubsidieerd project (903-39-179). Tijdens deze periode was zij gedetacheerd bij TNO Preventie en Gezondheid (nu TNO Kwaliteit van Leven) en werkzaam in het Gaubius laboratorium te Leiden onder begeleiding van Prof. Dr. Ir. L.M. Havekes. De resultaten van dit promotieonderzoek staan beschreven in dit proefschrift. Sindsdien is zij werkzaam in de farmaceutische industrie.

